..THE IRON AGE..

NEW YORK, OCTOBER 27, 1932

ESTABLISHED 1855

Vol. 130, No. 17

Tariff Is Key to Steel Industry's Future

By G. L. LACHER
Managing Editor, The Iron Age

IN attempting to evaluate the present status of the American steel industry and to forecast its future trend, reference could be made to the meteoric growth of that industry and the rapid diversification of its product. But, having been jolted by the depression, we have come to wonder whether past development is any criterion of the future. Trend lines may be prepared that are alarming or reassuring depending on the method employed. At best, any forecast of the future is a guess. A guess based purely on statistical factors undoubtedly has some value, but it has the disadvantage of ignoring fundamental changes in world economic and social conditions.

There is disagreement as to the character of these changes. And it is no doubt true that their full significance will not become clear until the passage of time gives us a better perspective. However, decisions cannot wait; policies must be determined now that will profoundly affect our future. Upon our present foresight or lack of foresight will depend the fortune or misfortune of coming generations.

The Free Trade Argument

We are at the fork of the road. Which way shall we go? A powerful group of internationalists urges us to go in the direction of free trade. We have loaned huge sums to Europe, we are reminded, and the only way that we can expect to get our principal back, or even the interest, is by lowering the barriers to foreign goods. Moreover, a tariff reduction would permit a larger exchange of products in international trade and the consumption of all goods would thereby be increased. Free trade, it is contended, keeps the cost of production at the lowest point and gives all the industries which best suit a country the best chance of success. Furthermore, tariff reductions would increase the purchasing power of domestic consumers and lower the costs of domestic producers, making it possible for them to compete more effectively in the world markets.

This reasoning sounds plausible. But it should not be accepted without careful consideration. It is not explained, for example, how importing European products to offset debts would stimulate exports to Europe. If goods are exchanged for debts, they cannot also be exchanged for goods. We cannot have our cake and eat it too.

The free trade argument also ignores another factor. Let us assume that the increased proceeds from sales to this country were not used to pay off debts—and it is highly probable that they wouldn't be—what then? Have we any assurance that they would be translated into increased purchases of American goods and not into expanded expenditures for armaments? Certainly the post-war record in this connection is not reassuring. And if a growth in European income, because of such a diversion, did not raise living standards abroad, what would be the competitive effect on American industries?

Real Wages Would Be Forced Down

It is well known that wages—and by this I mean real wages—are much lower in Europe than in the United States. A report of the International Labor Office in 1927 indicated that the purchasing power of money wages in the United States was 80 per cent greater than in Great Britain, nearly three times as much as in Germany, and nearly four times as much as in Italy or Austria.

Now if real wages abroad were not raised, the inevitable effect would be to force American wages down to the same level. It will be argued, of course, that greater managerial skill and superior equipment would

PROTECTION has built up American domestic business and has raised the real wages of our workingmen. High mass purchasing power, in turn, has made volume production possible. A large domestic industry has stimulated imports, of which two-thirds enter the United States duty-free. A low tariff, by driving down wages, would destroy our domestic market and hence reduce, rather than increase, our ability to import foreign goods. Tariff reduction at this time would be particularly disastrous to the steel industry, declared the author in an address before the National Association of Sheet Metal Distributors at Atlantic City, Oct. 18.

make it possible to maintain American real wages at a higher level. But this argument has lost most of its force since the war, because American capital and American technique have put many Continental industries virtually on a parity with ours so far as plant and management are concerned.

In failing to take into account the wage factor, the theory of free trade also fails to recognize the wide difference between American and European attitudes toward markets. European industrial nations are largely export-minded. Their principal concern is to drive their costs lower than those of other nations so as to capture a maximum of foreign trade. Labor is an element of cost which must be kept at a mimimum; it is not considered as one of the components of consumer demand. Hence the pressure against wages is bound to increase as international competition grows more acute. Great Britain had the lion's share of world trade in manufactures for many years, but as long ago as the early 70's of the last century a prominent Englishman, the Right Honorable Sir John Barnard Byles, foresaw the inevitable outcome of the international scramble for industrial markets. He said:

"In the fierce struggle of universal competition, those whom the climate enables or misery forces or slavery compels to live worst and produce cheapest will necessarily beat out of the market and starve those whose wages are better. It is a struggle between the working classes of all nations to determine which shall descend first and nearest to the condition of the brutes."

If customs and standards of living were identical in all competing countries there would be no particular harm economically in lowering tariff barriers. Labor everywhere would then seek about the same level in terms of real wages. But unfortunately this is not true. Europe has a superabundance of labor; in fact, such leading industrial nations as Great Britain and Germany have been afflicted with serious unemployment for most of the years since the conclusion of the World War. Besides being in oversupply, European labor is used to and expects much lower living standards than prevail in the United States. In the course of one to three generations it is possible that their real wages might rise to the American level, but in the meantime what would happen here?

Readjustment Would Be Ruinous

A drastic readjustment to a new competitive plane cannot be accomplished overnight. During the time that American manufacturers were striving to reduce wages they would be at the mercy of competition which would ruin them. All values in the country would have to be permanently lowered to meet the new cost levels. As the present depression has proved, a sharp decline in values always increases the debt burden. Are we ready for further deflation of this kind and a deflation, moreover, from which no measure of recovery can be hoped for? If our object is to help Europe emerge from its debts, will we accomplish anything by plunging ourselves into even more hopeless indebtedness?

And the problem does not end here. If we drove our labor down to European levels, a very large part of our domestic business would be destroyed. A recent study by *Business Week* shows that 75 per cent of the total value of consumers' goods and services disposed of in this country in 1929 was absorbed by people with incomes of less than $5,000; more than 54 per cent was absorbed by those with incomes of less than $2,000; while nearly 18 per cent was accounted for by those receiving $1,000 a year or less.

These figures are revealing. They indicate the extent to which American business has cultivated and enlarged its domestic market while Europe has been concentrating on world trade. But there are other figures even more illuminating. In 1929 the United States produced more than 56,000,000 tons of steel, or nearly half of the 118,000,000 tons made in the entire world. Less than 7 per cent of American production in that year was exported. Hence, it can be seen that per capita consumption in this country is far ahead of that of the rest of the world.

Why Real Wages Are High in the United States

Why and how has American domestic consumption risen to such heights? A review of our history is enlightening. Until recent years this has been a country of cheap land and labor scarcity. One of the most important events in our history, from the standpoint of economic effects, was the passage of the Homestead Act of 1862, which made it possible for any settler to take up free land in the West. This statute literally constituted a wholesale capitalization of consumers. It was a mammoth subsidy to consumption. Wage earners and European peasants who had had no prospect of ever rising from a low economic plane were given the opportunity to become an independent and prosperous yeomanry. Moreover, the wages of those American workers who remained in their jobs were sustained by the ever-present alternative of joining the westward march.

When the last of our frontiers had been conquered and all remaining free land had been taken up, the expansion of railroads, the opening up of mines and the building of mills and factories absorbed surplus labor. When finally a saturation point seemed to have been reached, an act was passed in Congress in 1921 to restrict the flow of immigration.

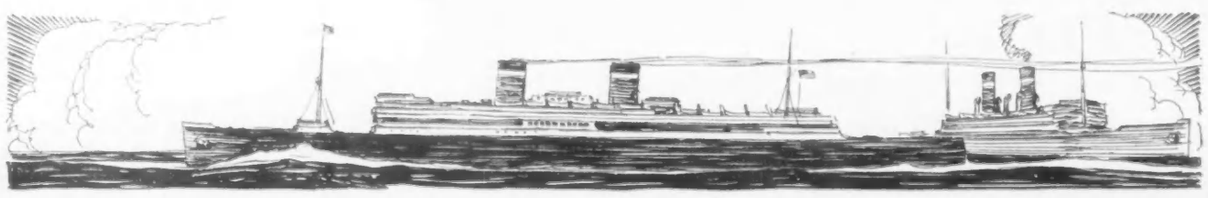
A labor scarcity which had been previously caused by the rapid development of a new country and the wisdom of Congress in dividing the public domain among settlers was now continued artificially by statutory enactment. This law marked the end of one epoch and the beginning of a new one. A national industrial system which had been geared to serving the wants of a steadily expanding territory and a rapidly increasing population now had to adjust itself to a condition in which neither of these factors could be counted on. In our expansion stage American manufacturers had been motivated by the same principles that still govern European producers. Their aim was to supply the needs of more and more people. They did not concern themselves with the question whether the purchasing power of those people was rising or falling. More people, more communities, meant more business. Nothing could have been simpler.

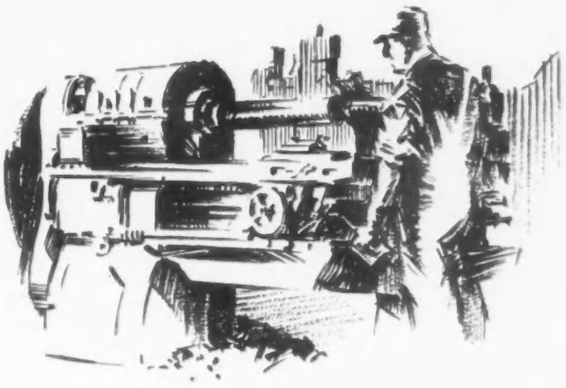
This economic stage and the one succeeding it remind one of two phases in the development of a farm. So long as additional acres are acquired and put under cultivation, an increase in yield in proportion to the added acreage can be expected. But when no more acres can be put under the plow, the problem of production presents new aspects. Yield then can be increased only by better methods and fertilization.

What We Learned in the 20's

This is exactly what American industry discovered in the 20's. It turned from extensive to intensive cultivation of business. Its war experience had taught it to produce on a large scale with a facility undreamt of before. Meanwhile wages held much of their war gains and when producers saw that these wages could be converted into a tremendous purchasing power they were not disposed to disturb them. The so-called "high wage" theory superseded old economic

(*Continued on Advertising Page* 18)





Army Finds Molybdenum Satisfactory Substitute for Tungsten in Tool Steels

INTEREST in the subject of molybdenum high-speed steels was keen at the National Metal Congress in Buffalo, Oct. 3 to 7, as evidenced by the discussion of a paper on this subject delivered by J. V. Emmons, metallurgist, Cleveland Twist Drill Co., Cleveland, at one of the technical sessions of the American Society for Steel Treating. A brief abstract of this paper, with some of the discussion, was published in THE IRON AGE, Oct. 13, pages 577 and 578. Comments by Dr. Michael G. Yatsevitch of the Watertown Arsenal, Watertown, Mass., were as follows:

Cause for Substitution

Since the World War the ordnance department of the United States Army has been actively interested in the substitution of molybdenum for tungsten in high-speed steels, in whole or in part, because tungsten belongs to the group of so-called "strategic materials." The department's investigations were carried out at the Watertown Arsenal and were published in part in the *Army Ordnance* magazine in 1930.

The investigations proved that tools, completely satisfactory for present day practical purposes in high-speed work, could be made by substituting molybdenum for tungsten. The investigations in general were somewhat more comprehensive than those of Mr. Emmons, since they involved the development of the technological side of making the metal, the stock and the tools, including forgings, rolling and heat treatment practice.

Analysis of the Steel Used

More than a year ago, after proving, by extensive laboratory and shop investigations at the arsenal, the complete suitability of molybdenum as a substitute for tungsten in tool steels, the ordnance department placed with one of the manufacturers of high-speed steels on order for 14,000 lb. of molybdenum tool steel of the following specified composition:

	Per Cent
Carbon	0.65 to 0.75
Manganese	0.15 to 0.75
Sulphur	below 0.025
Phosphorus	below 0.025
Silicon	0.15 to 0.25
Chromium	3.25 to 3.75
Vanadium	1.15 to 1.35
Molybdenum	9.25 to 9.75

This was made into various shapes and sizes from ⅜ to 6 in. in diameter or other corresponding dimensions. The whole lot was distributed among various arsenals in order to be made into various tools to be used in production work for the purpose of recording the performances obtained. The data accumulated from that experiment on a production scale wholly confirmed the expectations and hopes built on the experimental work.

It appeared that the manufacture of the steel and shapes did not present any difficulties. The manufacturers were pleasantly surprised at the ease with which all the difficulties, expected and feared at the time of taking the contract, were eliminated. The arsenal naturally cooperated with the manufacturer in all respects and passed on all information obtained from previous investigations. On completion of the order the metal was subjected to a particularly rigid inspection, including macro - etching tests, etc., which the steel stood excellently.

Service Performance Favorable

In general the Watertown tools gave service performance much more favorable to molybdenum tools than might be expected from the results of Mr. Emmons' data for similar compositions. It was realized that the drilling tests alone do not represent a true test for tools, so the actual shop tests on heavy and light lathe and planer tools, milling cutters and reamers were selected. Similar parallel tests were made with tungsten tools of the 18-4-1 type, and performances compared. It appeared that light and particularly heavy planer and lathe tools stood up on the average as well or better than the tungsten or tungsten-cobalt tools.

The steels VI and VII in Mr. Emmons' series are the nearest to Watertown Arsenal steels on the basis of their composition. It is a pity that steel VI was not tested for mechanical properties, and that no curves are given for steel VII. Unfortunately this makes it impossible to compare now the arsenal steels with those investigated by Mr. Emmons.

Different Heat Treatment

The arsenal heat treatment differs somewhat from that of Mr. Emmons and perhaps this may throw some light on differences in properties and structure. The heat treatment and photomicrographs and other more detailed information are given in my written discussion.

I wish to join in commending Mr. Emmons for the splendid piece of work described in his paper. It seems to me to be one of the very few and rare published investigations aiming to establish quantitatively the difference in the effect of molybdenum and tungsten on high-speed properties of tool steels. Since 1913 this subject appeared to me as particularly interesting, taking in consideration general chemical and physical properties of both elements. It promises the possibility of some very tempting generalizations which could be of great practical value. Investigations such as those of Mr. Emmons ought to be very welcome and encouraging.

Rapid Evolution of Bar Mills Typified by McDonald Plant

By T. H. GERKEN
Pittsburgh Editor, The Iron Age

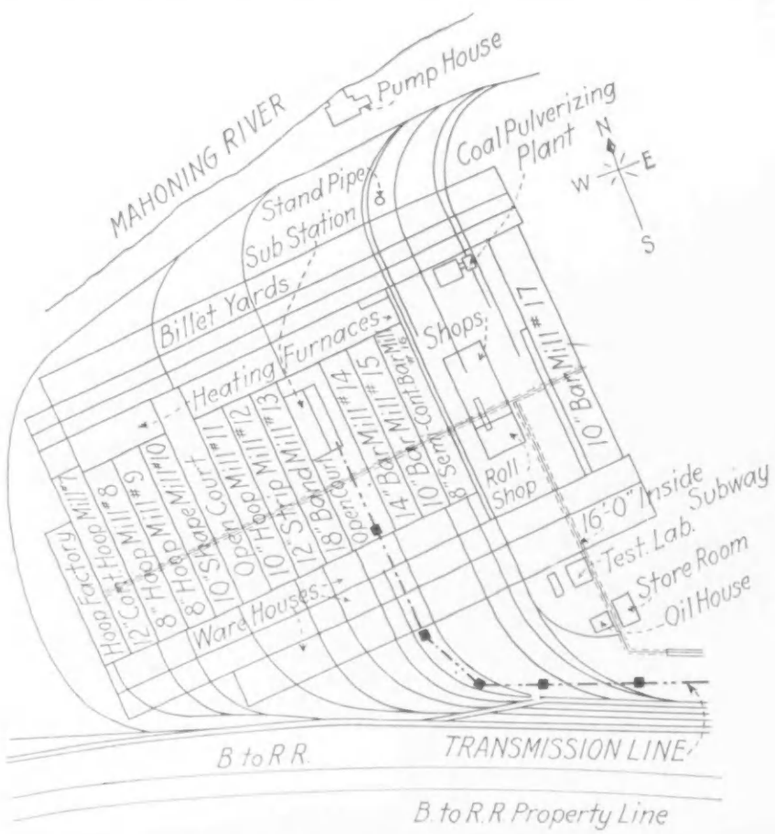
DEVELOPMENT of what is probably the most complete plant in existence for the production of steel bar, strip and hoop mill products has been carried on by the Carnegie Steel Co. at McDonald, Ohio, in the last 16 years. With the completion late last year of a 10-in. continuous mill for the rolling of various sizes of squares, rounds, hexagons, flats, concrete reinforcing bars, spring steel, etc., eleven units are now in production under exceptionally economical conditions of arrangement and general lay-out. Products range in size from 0.0638 lb. per lin. ft. up to 51 lb. per ft., and, as shown in the accompanying illustration, steel can be rolled in practically any form desired by a customer.

McDonald is located about seven miles northeast of Youngstown and is connected by a company railroad with the Carnegie company's Ohio Works, which supplies billets, blooms and slabs to the McDonald mills. The plant site was chosen after a complete study of industrial conditions in the Valleys district and a model industrial town was erected near the mill site by the company. The first units were constructed with ample room for additional parallel mills up to 30 in number. Beginning with the hoop factory at the western end of the plant, the eleven completed units are arranged in the following order: a 12-in. continuous hoop mill, rolling large coils of hoops, strip steel and skelp; two identical 8-in. hoop mills, producing hoops and bands in cut lengths and coils; a 10-in. mill rolling small shapes; a 10-in. hoop mill similar to the 8-in. units; a 12-in. continuous strip mill; an 18-in. band mill; a 14-in. bar mill, rolling small shapes and sections; a 10-in. Slick-type bar mill, producing rounds, squares, flats, hexagons and small shapes; a smaller 8-in. semi-continuous bar mill, and the most recently completed 10-in. continuous bar mill.

The roll and machine shops are placed between the last named units at the approximate center of the mill site, while the power sub-station is located between the 18-in. band mill and the 14-in. bar mill, or close to the center of the present installation. The hoop factory and the 12-in. continuous hoop mill were finished only a short time before the recent 10-in. mill and completed the westward extension of the plant. Possible additional units will probably be located adjacent to the latter mill, where adequate space is available.

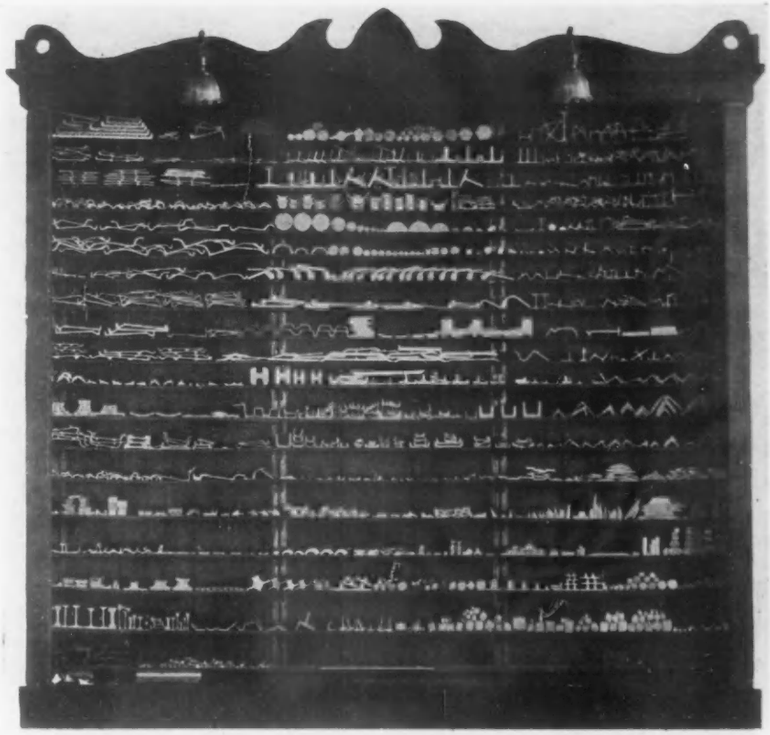
Transportation of billets, blooms and slabs into the plant and of finished products out of it, as well as the handling of material in process, is carried on under almost ideal conditions. The Youngstown & Northern Railroad, connecting the McDonald Mills with Ohio Works, runs along the entire north side of the plant with spurs feeding the billet storage yards, which also extend along the entire side, directly behind the continuous heating furnaces which supply the individual mills. Along the south side of the plant at the end of the run-out tables and conveyors are three parallel warehouses, running at right angles to the mills themselves. Here the finished material is sorted, inspected and prepared for shipment. The warehouses are served by railroad spurs connecting with another branch of the Youngstown & Northern, extending along the south side of the plant.

Movement of material and supplies other than steel through the mills is facilitated by a subway which extends under the entire length of the plant at right angles to the mills and serves each unit by means of shafts located at convenient intervals. This main tunnel is connected with an auxiliary subway at right angles to it, which



GENERAL PLAN OF THE McDONALD BAR MILLS

VERTICAL rolls on two stands in a 10-in. continuous mill, which delivers 1000-lb. coils, and a cooling bed with an unusual kick-off operation for straight bars, are features of the latest of the McDonald mills of the Carnegie Steel Co. The eleven units now built comprise parallel mills, all terminating in common warehouses extending crosswise of the works. They are the development of 16 years and typify the rapid evolution of bar mill practice. The plant stands as the most complete in existence for the production of steel bars, strip and hoops.

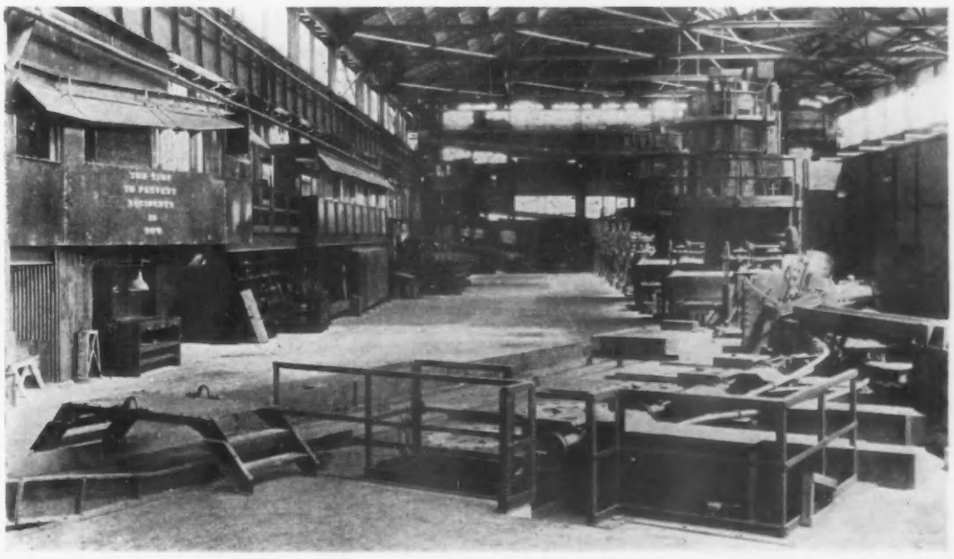


The versatility of the modern bar mill is well indicated in this picture of a display case of some of the shapes of bar mill size which can be rolled at the McDonald mill of the Carnegie Steel Co.

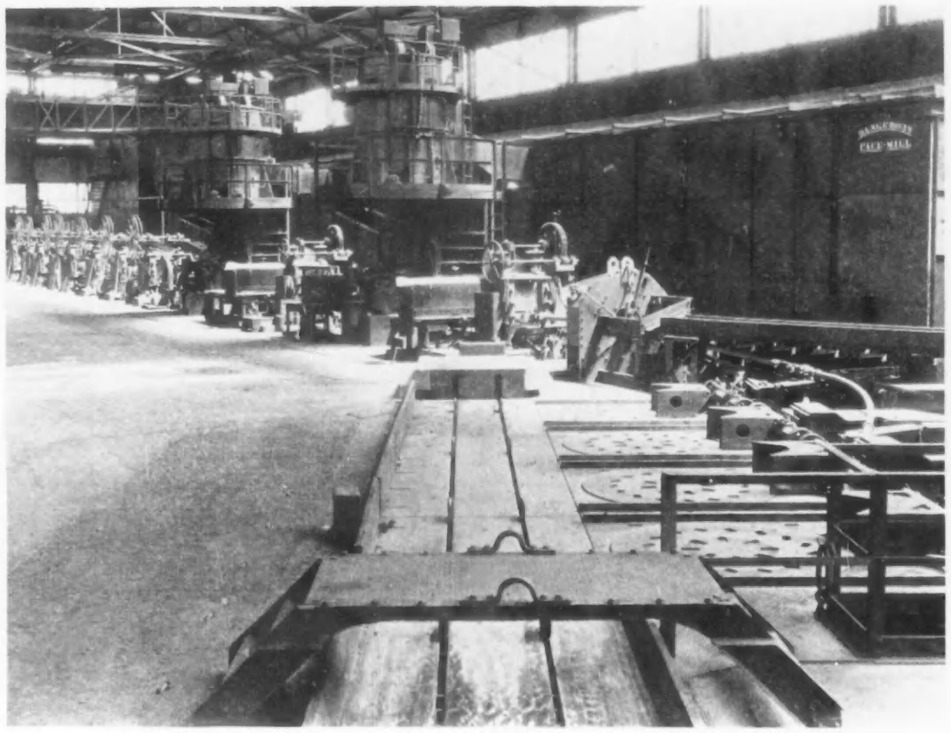
runs out of the plant past the physical testing laboratory, the oil house and the store room, emerging near the plant offices at the southeast corner. The tunnel system is an important factor for promoting plant safety as well as a great convenience in moving rolls and other accessories by means of electric storage battery trucks without crossing over the mills themselves. The individual mills as well as the warehouses and billet storage yards are served by electric overhead cranes of varying capacities.

Examination of the McDonald Mills as a whole offers an interesting study of the changes and improvements in bar mill practice during the last 15 years. Although the oldest units are still modern when judged by the standards of the industry as a whole, the refinements which have been incorporated in the more recent 12-in. continuous hoop mill and the 10-in. bar mill have given these units many advantages over their predecessors in speed and capacity. Customer requirements have grown more exacting and the industry has met the challenge by more rigid control of product and more careful inspection of material.

High speed and great versatility are the outstanding features of the 12-in. continuous hoop mill, although the unusual conveyor system for moving of the completed coils out of the mill is worthy of comment. The unit is capable of rolling flat hoop stock 2¾ in. wide down to 0.025 in. in thickness and has a maximum speed of 2800 ft. per min. It consists of 14 stands and is driven by 250-volt, direct-current motors, Ward-Leonard controlled, with series exciters to hold the speed regulation within bounds. Two vertical edgers are speed-matched to their adjacent stands by Reeves



THE coiling arrangements of the 10-in. mill are shown in the foreground with the entrance to the cooling bed at the extreme right. Direction of the bars from the shear to the various coilers and the run out bed is handled from the pulpit in the left foreground while control of the rolling operations is manipulated from the pulpit directly behind it.



THERE are 12 stands of rolls in the 10-in. mill including the two vertically driven. The pipes leading to the coilers are shown at the right and the pin conveyors which transfer the coils from the coilers to the hook conveyors are visible in the foreground.

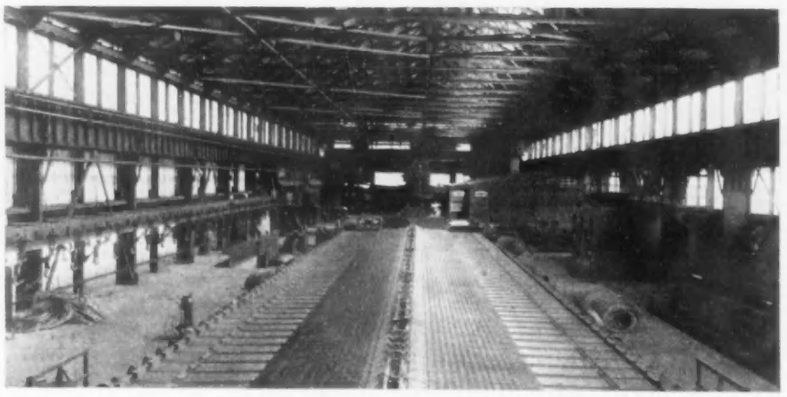
drive and carbon pile regulators. The load and speed of each main drive motor is indicated on the pulpit desk and the load on the last four finishing stands is also indicated by large illuminated dial meters so that the roller can distribute the load proportionally on these motors.

The finished material is delivered from the last stand of rolls to an apron conveyor, whence it goes through the coilers and then to a continuous coil conveyor. The coils are carried along in a horizontal position and as they reach the end of the conveyor they are turned downward into a vertical position and dropped on to a conveyor table which moves forward the width of the coil at regular intervals. This table will accommodate a half turn's work without cleaning up and materially reduces the frequency of bothersome handling operations. The same plan is used in the 12-in. strip mill, but is otherwise unique in the bar industry.

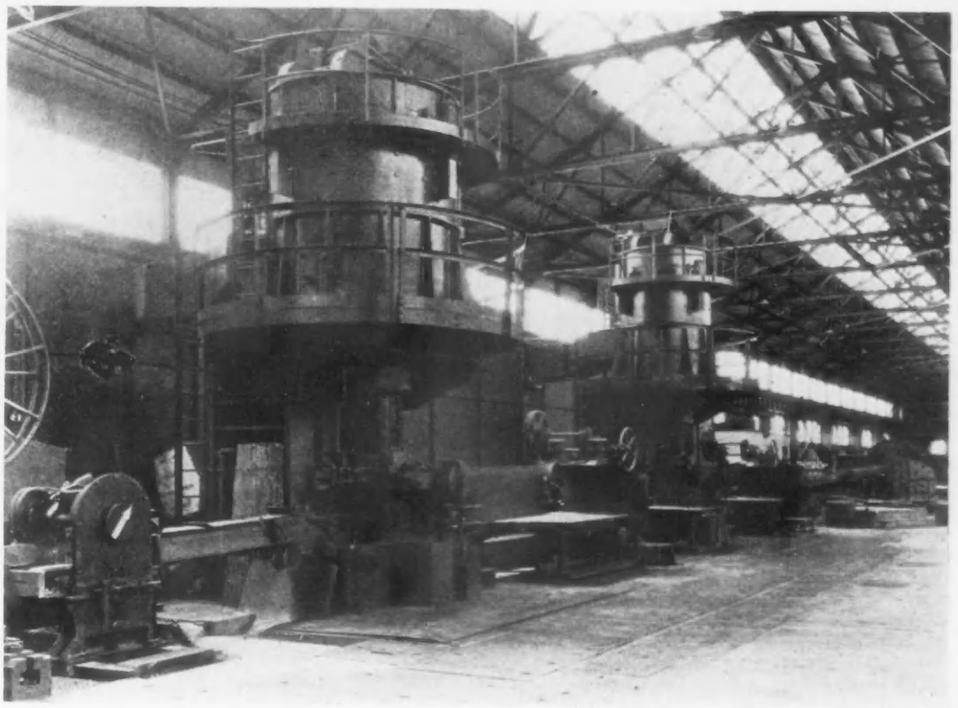
The 10-in. continuous bar mill is worthy of more detailed description because of the unusual features which make it practically the last word in modern bar mill practice. Of particular interest are its synchronization of motor control, its high speed and the introduction of vertical rolls driven by vertical motors on two stands. The unit will turn out material in coils up to 1000 lb., as well as in cut lengths up to any conventional requirement.

Billets are fed into a tar-oil-fired continuous heating furnace of conventional design in the north end of the mill, which furnace has a capacity for 30-ft. lengths ranging from 1¾-in. to 3¼-in. square. From the furnace the billets pass through a shear and thence directly into the first of the 12 stands of rolls arranged in tandem. The first breakdown stand carries 16 x 36-in. rolls, operating from 10.36 r.p.m. up to a maximum of 41.43 r.p.m. The next four stands, of 14 x 36-in. rolls, gradually step up the speed from a minimum of 16.22 up to 181.72 r.p.m. The speed continues to increase in the next three stands, of 12 x 30-in. rolls. On the last four stands of finishing rolls the vertical rolls are 11½ in. in diameter and the horizontal 10 in. The usual horizontally driven stands are alternated with the vertical rolls, driven by vertical motors. The main drive motors for the horizontal stands are 250-volt direct-current units, Ward-Leonard controlled, with speed regulated by Reeves drive and carbon pile regulators. All main drive motors follow the speed of a master motor-generating set, which is driven by an adjustable-speed direct-current motor. Booster exciters are connected into the field of the main drive motors.

The introduction of vertical motors driving vertical rolls on stands No. 9 and No. 11 was occasioned by the need for eliminating difficulties in the twisting of the bar between passes at high speeds. On mills rolling small sections and taking light vertical passes, it is possible to drive vertical rolls through bevel gears, but the design of bevel gears of the necessarily high pitch line velocity and for the



Cooling bed of 10-in. mill with hook conveyor at left. The last stand of vertically driven rolls can be seen in the center background.



THE two vertically driven vertical stands of rolls in the 10-in. mill contrast with the last two horizontal stands because of their massive construction. Ready access to the driving motors is gained from the upper and lower inspection platforms. Cropping shear shown at extreme left.

heavy torques required becomes more difficult as higher delivery speeds and heavier reduction are called for. The motors on these stands are rated at 800 hp., with the one on No. 9 stand operating at 185 to 475 r.p.m. and that on stand No. 11 at 270 to 670 r.p.m. They are of the direct-current type, the larger weighing about 60,000 lb. and the smaller 40,000 lb. Both were built and installed by the Westinghouse Electric & Mfg. Co.

The motors are supported on a cantilever structure which also supports the rolls and the pinion housing. The structure is arranged to provide easy and unobstructed access to the rolls from the side and is strong enough to withstand static and torque loads commensurate with the service without appreciable deflection. Provision is made on the structure to adjust the position of the rolls in a horizontal and vertical direction, to match the adjacent horizontal rolls. The horizontal adjustment is effected by moving the whole structure with motor pinion and rolls on tracks, on to which it is lifted by hydraulic jacks. Once in position, another set of hydraulic jacks holds the supporting structure firmly to the foundation.

The vertical adjustment of the rolls is made possible by the use of a sleeve coupling with internal gear teeth, which is contained in the lower hollow part of the motor shaft. This arrangement permits moving pinions and rolls only, while the motor remains stationary. The weight of the pinions and rolls is counterbalanced by a balance weight. Inspection platforms are built around the motors, enabling the operator to inspect the motor in all its parts without great inconvenience.

From the last stand of rolls the bar passes through a flying shear and is then directed on to the cooling bed or to the coilers, as may be desired. Direction of the bar after it leaves the shear is accomplished from a pulpit and is carried on by means of a series of control pipes leading to the four coilers and to the hot bed.

In rolling coiled material the operator chooses the coiler for the bar to enter and after it is partly coiled regulates the selector for the next coil. The star-shaped selector is operated by means of five solenoids, four of which control the pipes leading to the four coilers and are moved by means of the energizing coil of the solenoid. The fifth solenoid operates the pipe leading to the cooling bed, and in case of current failure on one of the other solenoids, the bar is automatically transferred to the hot bed to avoid making cobbles.

From the coilers the material is transferred to a pin conveyor, which in turn transfers it to a hook conveyor for cooling. Movement from the first conveyor to the second is accomplished without interrupting the running speed of the conveyors and it has been necessary, not only to match the speed of the conveyors, but also for the pins of the pin conveyor and the hooks of the hook conveyor to be in their relative positions at the same time. This control has been accomplished by means of the differential Selsyn photoelectric cell principle. The hook conveyor is 1280 ft. long, with the hooks placed at 10-ft. intervals.

An unusual feature of the cooling bed is the kick-off operation, involving an automatic pause at the mid-travel of this motion to permit a certain amount of cooling before the bar is completely discharged on the bed. With the kick-off and lifting bar masters in the automatic operation position, the kick-off motion is started when the bar engages a flag switch and is lifted clear of the center table rolls. At this point the kick-off motion is slowed down and stopped through the operation of a cam-type limit switch and remains at rest for a predetermined period of time, which is adjustable at the operator's stand. At the expiration of the time pause period, the kick-off reaccelerates and discharges the steel into the pack trough. The automatic timing operation is accomplished by means of a small motor circuit. A special master switch is provided by means of which the kick-off operation is held in mid-position when it is desired to gage the steel. When the master switch is again closed, the operation proceeds as outlined.

Incorporated in the control is an ingenious arrangement to govern automatically the number of bars deposited on the cooling bed proper by the lifting of the bar. This consists of a ratchet relay which receives an impulse for each bar deposited on the pack trough and which is used to prevent operation of the lifting bar until the desired number of bars has been reached. By means of a selector switch located at the operator's stand, any point on the ratchet relay from one to ten may be selected, corresponding to the number of bars required in the pack trough. When that number has been deposited, the lifting bar automatically deposits the pack on the bed.

Appearance as a Sales Factor in Design

By GEORGE S. BRADY

MACHINERY and metal products have individuality and character, and these qualities differ with the purpose and setting or surroundings of the article. Machines must "look right" if they are to be sold for a specific use or for a definite place in a plant. Like the appearance of an individual who comes out without his collar and tie, the machine will not be considered by the customer as a perfectly functioning unit if it is rough or crude in appearance and if it lacks the finishing touches that give it proper setting in its place of use.

Appearance is always important, even though it may be far down on the list of qualifications for a machine used in an industrial plant and first on the list for a machine bought for the home. Poor appearance may even go so far as to be the most insuperable sales factor in a product. A radio, a refrigerator, or an electric appliance may have most outstanding points of superiority in technical design, and yet in spite of the fact that the functioning of the contrivance is the real reason for buying, the article may be set aside in favor of a less efficient product for no other reason than that its form or color does not appeal to the customer. In industrial machinery some outstanding cases can be cited where appearance has been a deciding point in the purchase, because mills and factories making consumer products have lately become show places which prospective customers are urged to visit.

Art, Finish and Form Requirements

It is only recently that any considerable attention was centered on appearance in design, and strange to say designers were not very receptive toward art, form and finish refinements. Not until the last two or three years has it been easy to convince some engineers that a finish that costs only a few cents on a thousand-dollar product is relatively worth more than those few cents and is important enough to require major consideration. The staid, old-fashioned type of practical engineer can yet hardly conceive that smooth, graceful lines and pedestals may have been the deciding point in the selection of a competitive article by a fussy customer.

But, nevertheless, considerable publicity has been given all at once to the fact that manufacturers have begun to put attention on art and form in machinery, and we have by no means heard the end of it. A few years ago most machines were crude looking things, often shapeless, with heavy spreading legs, and sometimes like a block of metal with a mass of gadgets tied on. The designers of the machines apparently thought only of getting something that would work, and had no interest in making the machine look attractive. Now, manufacturers are calling in artists to advise them, and good appearance is considered an important factor in the development. Few of them seem to know that early manufacturers employed artists and sculptors to add art to their machines, and that this early art was killed by the ridicule of engineers themselves.

ART, finish and form are becoming increasingly important as sales factors in design, particularly of consumer products. In this article, the author tells us why and also relates how progressive manufacturers are taking advantage of the sales appeal of product appearance.

This is the third and final article by Mr. Brady on the subject of the relation of sales policy to design. These are a part of the extending series covering Modern Merchandising in the Metal-Working Industry now appearing in THE IRON AGE.

Early Attempts at Ornamentation

The early Yankee machinery builders of New England knew no art except what they saw in their churches and on their carved furniture, so they naturally called upon the woodcarvers to make their patterns. The result was that lathes and planers had cast-iron legs with curves and ornamentation very much like those of stoves, and the housing uprights of planers were shaped and carved like the ends of church pews. During the fifties there was much ridicule of this favor of the arches and columns of architecture, and the machines built about the time of the Civil War were extremely severe in architectural lines. Art in machinery was not again revived until a few years ago, and it is now tending to "functional" lines and curves to conform as nearly as possible with the intended use of the article.

A test of the proper application of art to a product is that it should not appear to be added as an afterthought. The design as applied by the artist must be "conventional," that is, in a commercial article the art treatment must express the use and purpose of the product, employing only that art called for by the occasion. To avoid the mistake of going too far with this application of art, the artist must be imbued with the spirit of the product, and of its market. While the mechanical designers are likely to be too conservative, close cooperation with them gives the artist the viewpoint which will temper his work.

Appearance Must Fit Environment

It will be found that the successful product artists always spend some time in the shop and with the sales executives before tackling the design. George Switzer, product artist who has visualized and mapped out general design form for some of the most important companies in the country making a diversity of products differing as widely as vacuum cleaners, automobiles, electric appliances, and office furniture, lays emphasis on the point that preliminary studies from every angle are first necessary before anything is done with the form-changing of the product. A machine made extremely beautiful from a pure art standpoint might be totally unfitted by such art to the surroundings into which it is to be set, or be unfitted to the temperament of the workmen who must use it. The old artists never made any attempts to study the manufacture and the field of usage of the machines, but the new generation of product artists, who have come forward within the last five years, have had to have enough engineering background to visualize the article in its course through the manufacturing

shops and in its final setting in the hands of the customer.

In the painting and exterior decoration of products, manufacturers seemed at first to have been afraid of color because it added to the shop production difficulties. For many years practically every machine tool sold was painted black, which only added to the gloomy appearance of already dull workshops. Workingmen wanted more brightly painted shops, but they were not able to get them. I recall a number of years ago the almost shouts of satisfaction that greeted the installation in a shop of a Hendey lathe that was painted a pleasing blue. Regarding household machines, D. R. Dohner, art director for the Westinghouse company, made the statement to me that manufacturers literally "jammed down the householders' throats" the whites, grays and undesirable or unsuitable neutral colors. Some attention was early paid to finish, but in an engineering and not in an artistic way. As long ago as 25 years, when every typewriter made was a jet black, enormous labor was put into the hand rubbing process with as many as five hand polishings to smooth down the finish.

Development of Lacquers Introduced Color

But in fairness to the manufacturers, it should be explained that it was not until the perfection of the nitrocellulose lacquers about ten years ago that color could be added to many products cheaply. In 1924 only one make of automobile was finished in lacquer, but the following January as many as 40 per cent of all cars exhibited at the New York show were in lacquers. The typewriter companies began to put colored lacquers on their machines, and shortly 80 per cent of all the portables of one large company were in bright colors. When the colored lacquers were applied to household washers, which formerly had mostly ugly copper tubs, they were sold 5 to 1 in favor of green alone.

Color, which is one of the chief tools for adding aesthetic appeal to products, must be handled by an artist with an appreciation of the functional utility and the ultimate setting of the product. Color actually excites and stimulates emotions like a drug.

(*Concluded on Advertising Page* 22)

Ideas Originating from Depression Redesign

1. Use standard commercial parts, units and mechanisms wherever possible even if it means reducing the production shops. Advantages: reduction of detailed supervision necessary, reduction of overhead, usually better units from the specialists, benefit of the specialists' advertising, more flexibility in the manufacturing organization.

2. Die cast or mold parts to reduce machining. Buying these from specialist casters or molders keeps down supervisory and overhead costs, assures uniform high quality and specialists' expert service. The average general manufacturing plant cannot afford to maintain research in each specialty.

3. Use of natural metal colors to enhance the appearance of machines. Polished bronze or brass castings or forgings used with an artistic eye give distinctive touches to mill and special machines. Aluminum and magnesium alloy parts give beautiful silvery contrasts on red and green machines, such as textile equipment. Aluminum and brass unfinished screw-machine parts and fittings give desirable color touches on machines.

4. Chromium plate gives extra hard wearing surfaces cheaply where all-the-way-through hardness is not necessary. Chromium to give hardnesses from 600 to 900 Brinell can now be plated up to 0.005 in. thickness on steel or non-ferrous metals without undercoats.

5. Use drawn shapes in steel, brass and aluminum for parts made in large quantities to cut down machining costs. By slight changes in design difficult machined shapes can frequently be made by the simple sawing off of drawn bars.

6. Specification of nickel or chromium alloy high-strength cast irons to obtain smaller or neater castings with equal or greater strength.

7. Steel forgings coined to size to save expensive machining. On the other hand, steel castings, plain or alloy, can sometimes be substituted for forgings at a lower cost.

8. Weight saving with aluminum or magnesium alloys. Extra mass per pound of these alloys reduces the part cost of the more expensive metal. Specialist founders now produce guaranteed parts of exceptionally high strength in special and patented alloys. Recent uses of light-weight alloys are for reciprocating parts for high-speed machinery, and for overhanging parts such as the arms of radial drills; also for removable arbor supports and removable covers.

9. Welding wherever possible to save operation costs as in building up units by welding together special steel sections where the quantity is too small to cover pattern and casting costs.

10. Design to make as many parts as possible on screw machines and presses where unit production costs are low. Deep-drawn parts can often be most economically made in aluminum because of the high extrusion possibilities, and difficult drawn parts can often be made cheaper in brass in spite of the extra cost of the metal compared with steel. Where the machining time is long, brass or aluminum at higher rates per pound will result in lower-cost parts on the screw machine.

11. Photo-electric controls for machine feeds, sorting devices. Units can now be purchased complete for many uses.

12. In selecting materials for corrosion resistance hold in view the specific corrosive element, the cost, the relative workability of the material. The choice of materials is now very wide and includes: Rustless steels, KA2 steels, special alloy bronzes, aluminum alloys, silicon irons, molded glass, molded resinoids.

13. Eliminate noise by realization that noise comes from vibration and can be lessened by the balance of parts and by careful machining or grinding of running or rubbing parts.

14. Whenever feasible in a large plant producing consumer products set up a "pilot plant," that is, a department which is a complete small-scale production unit. It will pay for itself by actually turning out product, but it has the advantage that new design ideas can be put into limited quantities of products at once. These can then be put out for thorough trial and test before the regular plant equipment is changed.

15. More detailed attention to finishes instead of merely specifying "paint." The new lacquers for articles in colors where quick-drying is desired and the extra cost is not important; baking enamels where articles in color are to receive severe service; vitreous enamels for articles subject to abrasion or the action of hot solutions (mottled enamels were recently adopted to get away from spot rejections and thus reduce the cost of this type of finish); paints for large articles or where cheapness is more important than quick drying.

16. When calling for change in metal, especially one of the new alloys, bad results have sometimes been traced to the use of the old patterns which were not adapted to the peculiar foundry qualities of the new metal. Even alloying cast iron with nickel or other elements calls for a new design study of the parts.

17. When substituting molded materials for metal parts complete redesign should be made with consideration for the nature of the materials and the differences in appearance.

18. Designers should be given opportunity to test and use competing products to give them an appreciation of possible faults in their own.

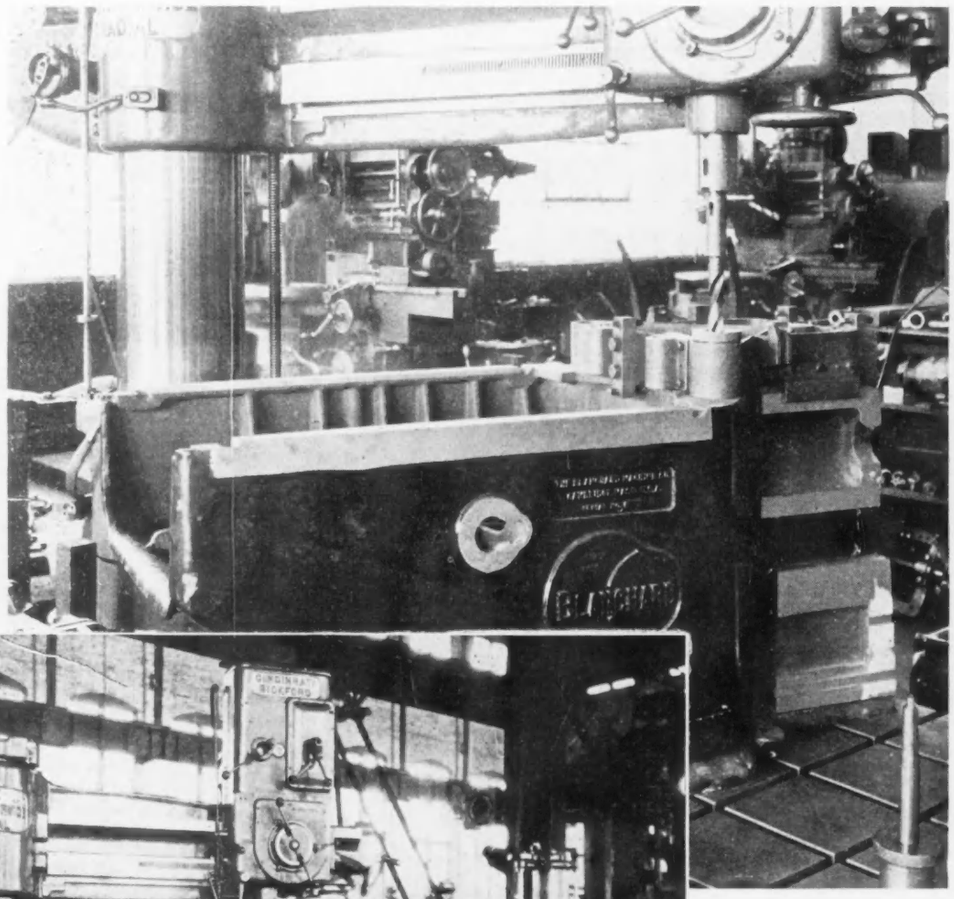
19. Designs that have to be "sold" by vigorous "educational" campaigns are usually lacking in technical merit or in outward sales appeal. Simple, informative advertising, rather than high-sounding words, should be sufficient to sell any serious product that is well designed.

20. There is no product that is not capable of improvement. The "best" product of 1929 is now out of date. The best product of today will be surpassed next season by a competitor's if it is not improved by its designers.

"Better Times"—

WITH time savings ranging from 22 to 44 per cent on individual jobs the radial drill has kept pace with the demand for more rapid production. In this, the seventh, presentation of "Better Times" are pictured drilling, tapping and turning operations on a variety of work. The examples are from current installations and the time rate comparison is with good practice immediately preceding the introduction of the new method.

Seventh in a series of "Performance Pages" as selected from actual practice by The Iron Age Editors

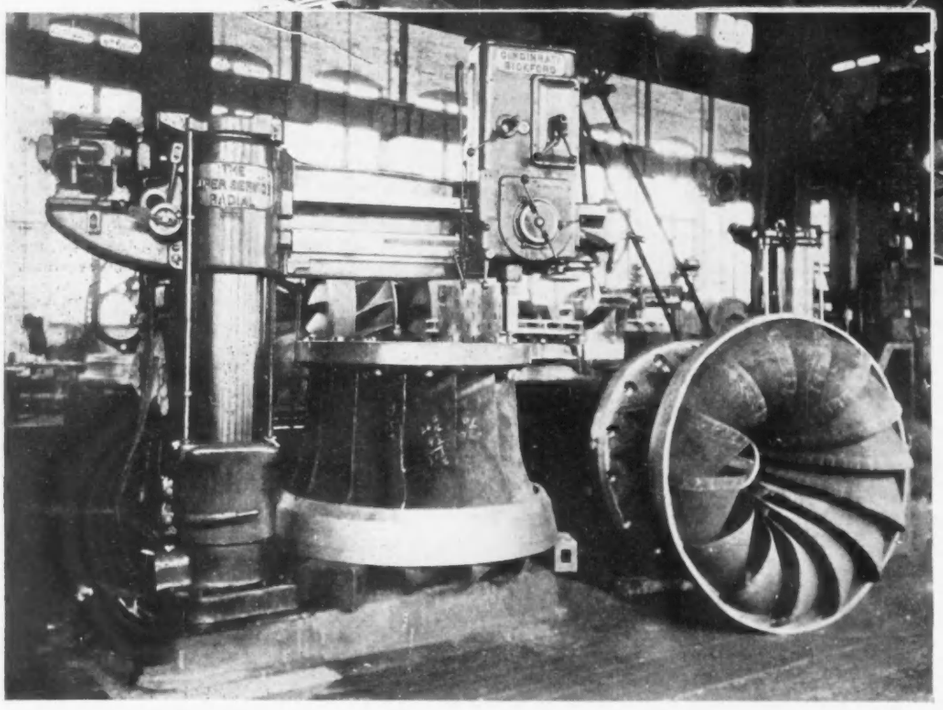


Completing 41 holes in 3300 lb. base for vertical surface grinder. Drilling and tapping varies from ½ in. tap to 3 in. pipe tap and 1 29/32 in. drill 6 in. deep. Four holes co-bored 3¾ in.

Present time for lot of 30—89 hours.

Previous time for lot of 30—129 hours.

31 per cent time saving.



Cast iron runner for hydraulic turbine, 14 holes drilled 1¼ in. diameter by 5¼ in. deep—Counterbored 3¼ in. diameter by 3¼ in. deep.

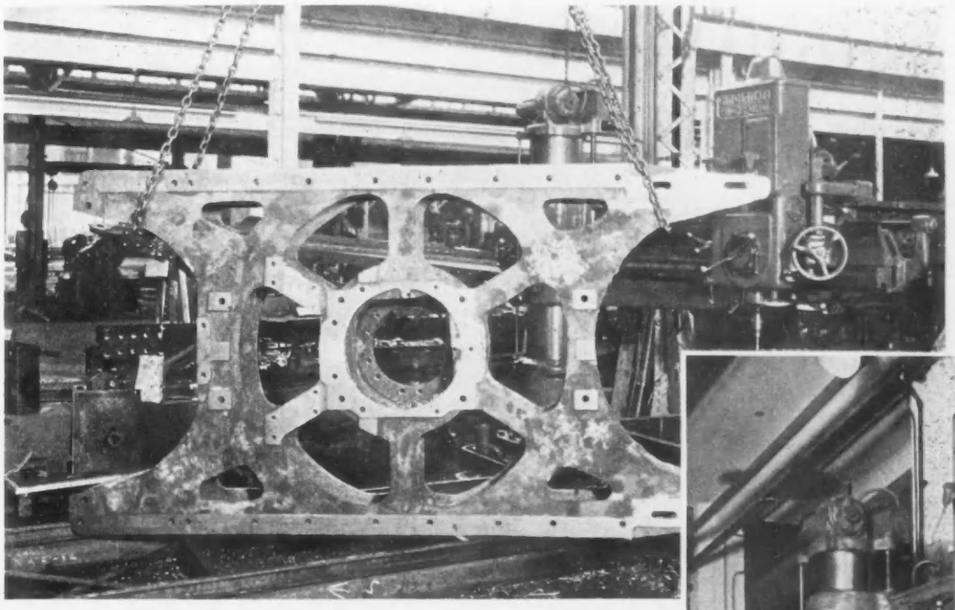
Present time — 5¼ hours.

Previous time — 7¾ hours.

32 per cent saving.

OPERATIONS: Drilling, Turning, Tapping

PRODUCTION EQUIPMENT: Cincinnati Bickford Drilling Machines



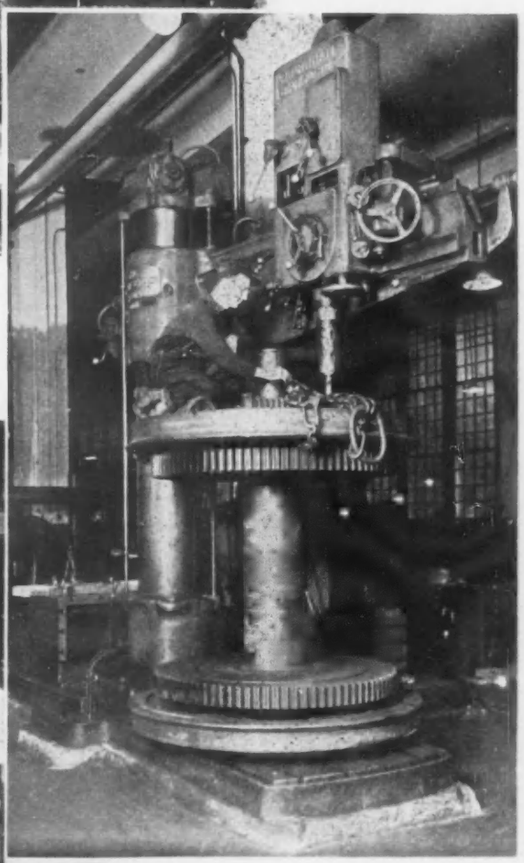
6000 lb. cast steel frame containing 72 holes (¾ in. to 1⅜ in.) drilled complete in 4½ hours.

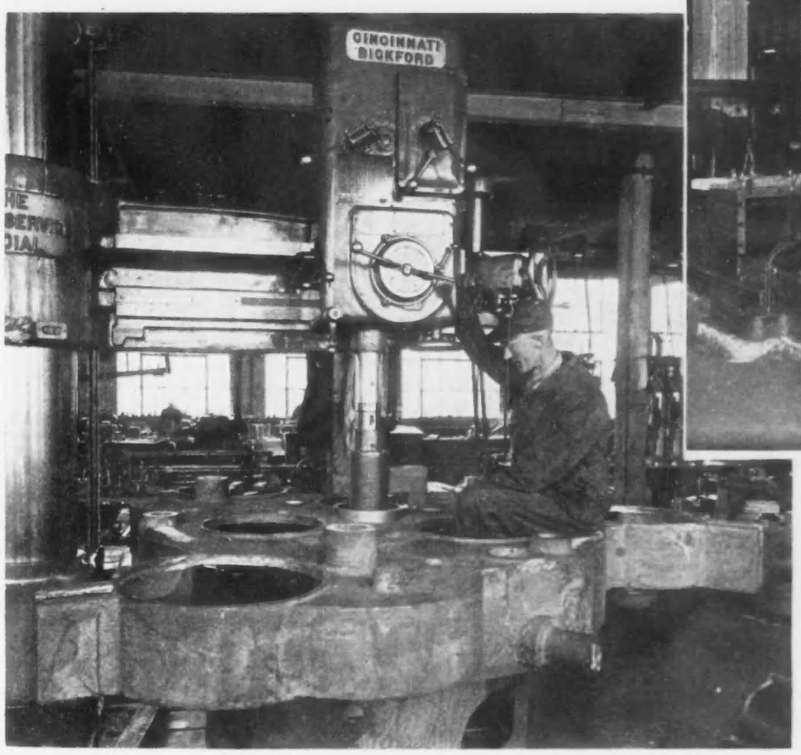
Present time—4½ hours.
Previous time—5¾ hours.
22 per cent saving.

BELOW

Drilling assembled "quills."

Present time — 5 hours.
Previous time — 7 hours.
29 per cent saving.





Turning the outside of a boss 11½ in. in diameter and 2 in. long.

Present time—1¼ hours.
Previous time—2¼ hours.
44 per cent saving.

Declares Extra on Commercial Forging Steel Is Discriminatory

Head of Forging Institute Asks Steel Manufacturers to Reconsider Action—Urges Trust Law Revision

CHARGING discrimination against the drop forging industry, emphatic objection to the policy recently adopted by steel makers to charge drop forgers a $3 a ton extra for commercial forging steel was voiced at the recent meeting of the American Drop Forge Institute in Buffalo by C. H. Smith, Cleveland, president of the institute, in a prepared address.

"Many of you," he said, "have no doubt already felt the effect of the recent plan of the steel industry in its attempt to work out some of its problems whereby it will not sell to a drop forging company commercial quality steel, and guarantee that it will be forgeable, above certain sizes. On the larger sizes there will be certain extra charges graded on a basis of sizes of steel.

"To my mind such a plan will not prove to be to the best interest of the steel or the drop forging industry and it will encourage the adoption of 'bootleg' methods which will defeat the main object in the minds of the steel executives.

"It is my hope that through the newly created atmosphere in the offices of the American Iron and Steel Institute, some one will see the fallacy of such a program as is now being attempted and, in turn, work out an arrangement that will be equitable to all, instead of the present plan, which discriminates against commercial forge companies.

Demands Uniform Quality Standards

"It would be better if the steel manufacturers, in their attempt to solve some of their problems, would give some thought and attention to the development of definite and uniform standards of quality for all materials that they manufacture, and then permit the purchaser to choose his requirements with a full knowledge of what he can expect to receive. This plan will give greater stabilization in the steel and forging industries."

Using industry's challenge to trade associations as his subject, Mr. Smith declared that today, as never before, trade associations offer opportunities for genuine cooperation and that there is a decided need for greater leadership, men of vision, courage and good sense. One of the outstanding moves in this direction, he said, was the recent appointment of Col. R. P. Lamont as president of the American Iron and Steel Institute.

The real cause of the depression in Mr. Smith's opinion was not overproduction, but the lack of a uniform plan for scientific distribution. However, it is impossible to secure adequate distribution when distribution is governed by destructive competition as it is in the forging industry. This destructive competition, he believed, could be eliminated by education. While the anti-trust laws may be modified in the next session of Congress, permitting business planning for equalization of production, consumption and employment, any such business planning for any industry, he said, must be handled by the trade association itself or some organization engaged in parallel activities. With proper remedial legislation, power and authority of trade associations would be increased, although these associations would be subject to Government regulation that would see to it that the measures adopted were for the best interests of the members as well as the public.

Should industry be allowed to correct some evils that have resulted from anti-trust laws and again be allowed to enjoy industrial liberty, each industrial group, he declared, will have to prove that it can protect itself from abuses from within or Government control is inevitable. He felt that the trade association can accept this challenge and can conduct the affairs of its industry in such a way that it will convince the American people that as an industry it has a right to guide its destinies.

Overcapacity of the Industry

The overcapacity of the drop forge industry, as was shown in a report just issued by the Department of Commerce, was discussed and some of the findings were read. This survey was made at the request of the Drop Forging Institute. A review of the report appeared in the Oct. 6 issue of THE IRON AGE.

Figures in this report showed that, even in the busy year of 1929 the drop forge industry had 60 per cent greater capacity than was needed. Of 244 companies making reports about 25 per cent are commercial, making forgings only for sale and producing 34 per cent of the forgings; 21 per cent are semi-commercial, producing forgings for sale and for use in their own finished products and making 43 per cent of the output and 52 per cent are non-commercial, using all their forgings in other products, and producing 21 per cent of the output. The survey covered 3084 hammers. It showed that 79 per cent of the tonnage of commercial forgings goes into automobiles, agricultural implements, motors and engines. About two-thirds of the total are automobile forgings. From 1928 to 1930 the number of hammers continued to increase and investment in the industry increased 22 per cent.

Automobile companies should be persuaded to scrap their forging equipment, most of which is 10 years old and buy their forgings from commercial forge shops, declared R. T. Herdegen, Dominion Forge & Stamping Co., in discussing means of solving the over-capacity problem, and he added that efforts are being made in that direction.

President Smith expressed the opinion that automobile manufacturers could be convinced that they can buy their forgings cheaper from commercial shops than they can make them. He also said that there are a lot of small hammers in New England which the owners could afford to scrap and buy forgings outside. The problem of excess capacity can be solved by the sale of obsolete equipment, declared D. A. Currie, Erie Foundry Co., hammer manufacturer.

Steel Mills Inquiring for Electrical Equipment

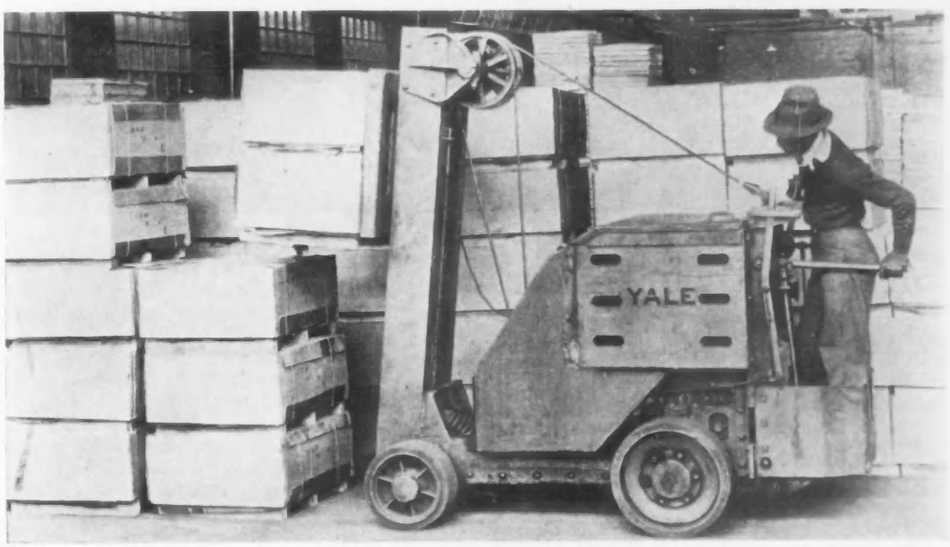
Electrical manufacturers are beginning to receive contracts and inquiries from the steel industry for apparatus which will be utilized to replace some of the equipment which has become obsolete, according to G. E. Stoltz, steel manager, Westinghouse Electric & Mfg. Co.

"Projects of this nature naturally are not large in comparison to what we have been accustomed to in the recent boom period," said Mr. Stoltz, "but they do represent a substantial improvement in conditions, and it is noticeable that in each instance the improvements are being made on a sound business basis and a favorable return on the investment will be obtained even on present day limited operations.

"Sheet and tin mills have been operating at a better rate throughout the last year than other types of mills such as tube mills and structural mills, and there has been throughout the year a number of installations made of machinery which will reduce operating costs of producing sheet and tin plate. The installation of this equipment represents a very good effort to place mills of this character on a profitable operating basis at a lower tonnage output than would otherwise be obtained."

Handling Tin Plate at Aliquippa

SUBSTANTIAL savings in time and money have been effected by the Jones & Laughlin Steel Corpn., in the handling of tin plate at its Aliquippa works. The methods employed are typified in the accompanying pictures and captions.



ABOVE

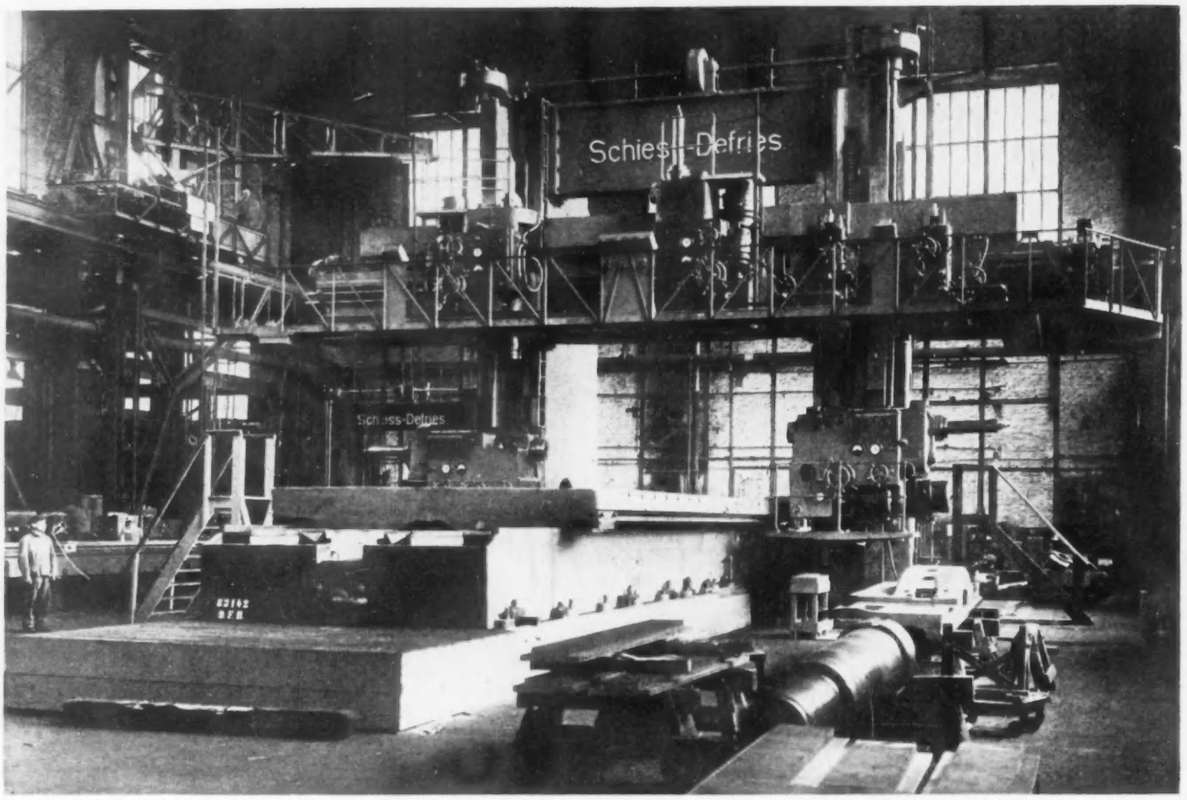
OCCASIONALLY it is found necessary to transport and stack loose bundles of tin plate. In such cases the method employed is similar to that shown in this picture. Piling strips are used here too, to divide the piles into convenient units.

ABOVE

TO facilitate the handling and rehandling of bundles by means of the fork, piling strips 2 in. square are used to separate the bundles. The same method is used for car loading.

AT RIGHT

TILTING-FORK electric trucks pick up the 10-package bundles, three at a time, in the assorting room. The load is approximately 6000 lb. The bundles are then carried, by truck, directly to the box cars or to the warehouse.



Completes Gigantic Milling Machine

WEIGHING 350 tons and capable of taking work up to 16 ft. wide and 16½ ft. high, the milling machine here illustrated, completed recently by the Schiess-Defries A-G, Duesseldorf, Germany, is believed to set a new record in weight and size for a machine of this type.

There are four milling heads, each with two separate motors, one for the drive and one for the rapid movement and feed. The milling heads are, therefore, entirely independent of each other. A large number of milling speeds and feeds and also boring feeds is provided. The machine is also equipped with two planing tool heads each with separate motor, and the planing tools are independent of each other for feed and high speed movement. For planing, the table is driven by a variable-speed reversing motor in conjunction with a Leonard converter. For milling, the table is driven by a separate motor, and a large number of table feeds and quick movements is obtainable. By means of a remote control push-button system the operator can control every movement of the machine from six different panel stations. By moving a few levers the milling machine is converted into a planeer.

Ammeters, speedometers for speed, feed and rapid traverse movements, and instruments that indicate the functions of the entire oiling system are provided at every station, enabling the operator to watch easily the machine in all its operations. Electric light signals mounted on a board show which tools are momentarily in operation.

Ball Thrust Bearing Has Cast Bronze Retainer

THE ball thrust bearing recently brought out by the Bantam Ball Bearing Co., South Bend, Ind., for clutch throw-out, or clutch release, applications uses a cast bronze ball retainer in place of a pressed steel retainer, and also a grease retaining band around the outside of the bearing. The latter extends down on one side past the center line of the balls, an arrangement intended to keep the grease within the bearing rather than being thrown out by centrifugal force. It is stated that with the bronze retainer and grease retaining band, it is possible to remove the oil tubes and grease fittings commonly used, and that the clutch release bearing may be considered in the same light as a clutch pilot bearing which seldom if ever receives lubrication after installation.

Puddled iron blunt rods served for more than 82 years on the United States frigate "Constitution," and would have served longer had it not been for their proximity to copper, according to the current issue of the *Reading Puddle Ball*, published by the Reading Iron Co., Philadelphia. The Monitor, of Civil War fame, was sheathed with puddled iron plates, and the "Chickasaw," part of Admiral Farragut's fleet, is now doing duty as a car ferry in New Orleans, her original puddled iron hull plates still being in excellent condition, it is stated.

The annual regional meeting of the American Society for Testing Materials will be held on March 8 in New York. The technical feature will be a symposium on motor lubricants.

Piston Pin Fits Checked by "Weighing" Process

UNUSUAL practice in checking the fit of piston pins is shown in the accompanying illustrations. The piston is mounted in a modified Elasticometer spring testing machine and the accuracy of the fit checked by noting whether the pressure required for driving the pin into its bearing is within predetermined limits.

The machine used is similar to that described in THE IRON AGE of Jan. 10, 1929, which is marketed in the United States by the Coats Machine Co., 110 West Fortieth Street, New York. The "weighing" process as employed by a large European piston manufacturer is described by C. E. Coats, treasurer of the Coats company, as follows:

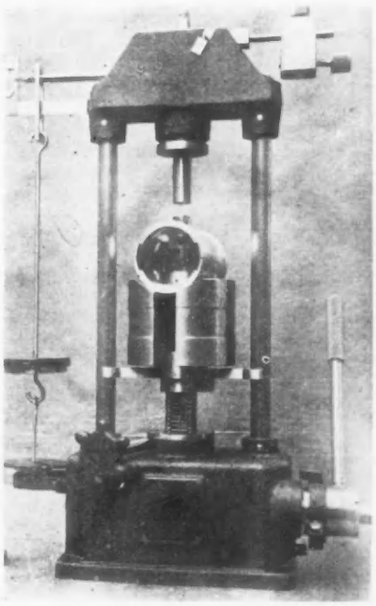
Pressure required for a sliding and a driving fit is first determined in pretests by adding or removing weights from the counterpoise of the machine scale. Having thus definitely established the upper and lower limits of permissible pressure for the fit desired, tolerance weights are put on the counterpoise, shown at *A* and *B* in the line sketch.

The stroke of the rack that actuates the platen of the machine is then set so that it will be equal to the piston diameter, this setting being made by means of the adjustable stop around the bushing of the hand-lever. A friction cone permits adjusting the hand-lever to the position most convenient for the operator.

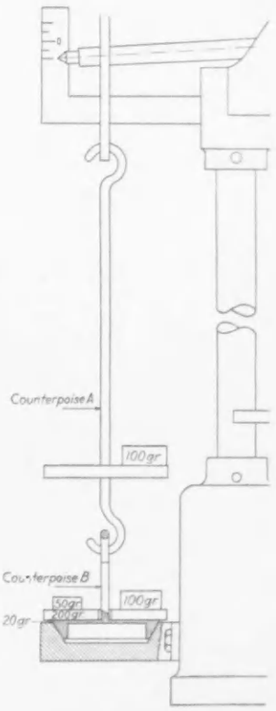
The scale of this machine pivots on steel knife edges and vees. It has a ratio of 1 to 10, and a weight of ¼ oz. will deflect an otherwise unloaded beam some ⅜ in. The piston or work to be checked is carried in two prismatic supports designed to accommodate pistons ranging from 2 to 5 in. in diameter. These V-supports must be rather high so as to permit driving the pin 2 in. or more below the lower piston pin bearing.

As stated, the machine is equipped with two load steps. On the first, or counterpoise *A*, is placed the minimum weight that the piston is expected to carry; and on the other, *B*, is placed a weight the balancing of which indicates too tight a fit. With this operating set-up, counterpoise *A* will be raised to the zero position of the beam; and at this point counterpoise *B* will automatically hook onto *A*. If the beam drops below the zero position (after this secondary load has become operative) then the pressure is within the required tolerance. If, on the contrary, the beam rises above zero, then the weight (or pressure) acting on the piston pin is greater and the permissible tolerance is exceeded. In the latter case the piston pin would, in use, have too much frictional resistance.

Since the working of the piston pin in its piston is important in the proper functioning of motors great care is exercised to establish and maintain correct fits. Application of carefully determined "weighing" pressures as described above is said to have proved uniform and dependable in this connection.

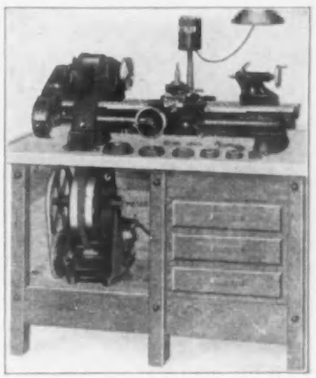


ELASTICOMETER spring testing machine adapted for checking the fit of piston pins. Arrangement of the counterpoises is shown in view at right.



Precision Bench Lathe with "Underneath" Drive

IN the "underneath drive" bench lathe recently announced by the South Bend Lathe Works, South Bend, Ind., the drive is by belt from a reversing motor mounted under the bench, directly beneath the headstock, as shown in the illustration. The down-pull feature of this arrangement is said to give an unusually steady, noiseless drive.



This bench lathe is of back-geared, screw-cutting type and in available in 8, 9 and 11-in. swing. It will cut all standard screw threads, right or left-hand, from 2 to 90 per in., including 11½ per in. pipe thread. An index plate shows at a glance the proper gearing for any desired tool feed within the wide range provided. Six spindle speeds are obtainable. Other features include a drum-type reversing switch, graduated tail-stock spindle, automatic feeds and precision lead screw.

Characteristics, both physical and welding, of the new Oxweld No. 25 bronze welding rod are set forth in a 20-page booklet published by the Linde Air Products Co., New York. In joining steel, tensile strength up to 60,000 lb. per sq. in. is claimed and ductility in excess of 30 per cent. Marked decrease in fuming is also emphasized. Applications described include joining of metals and building up of wearing surfaces. Bronze welding technique is outlined.

Electric Hoist Manufacturers Association reports that the number of hoists ordered during September decreased 17.3 per cent as compared with August. Shipments were 25 per cent greater in September than in August.

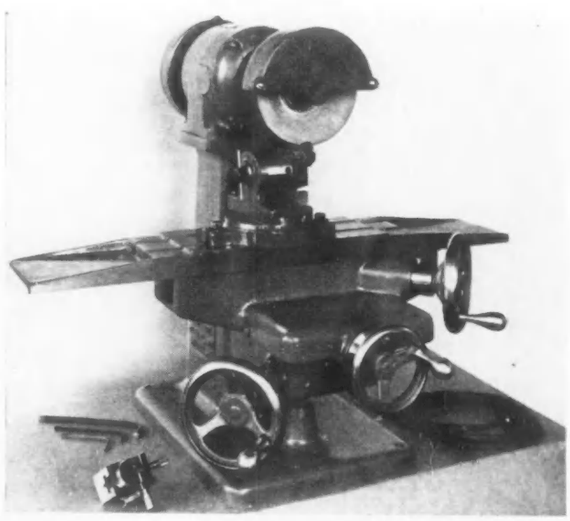
Small Chaser Grinder Has Wide Range

THE chaser grinder recently introduced by the National Acme Co., Cleveland, is small, compact and rigid, and although intended primarily for grinding tap and die chasers it may be used on other work. In large shops it may be placed close to the threading machines so that the chasers need not be carried to the tool room at some distant point. Installed in the toolroom, the machine is available for a diversity of work.

The knee can be raised or lowered readily, or the table moved away from the column, so that a wide range of sizes can be handled quickly. The machine can be furnished with a cast iron base mounted on casters for portable use. When so arranged, steady blocks are lowered into place and the front caster is lifted off the floor when the grinder is in use.

A ½-hp. fully-inclosed ball-bearing motor arranged for connection to the lighting circuit is employed. The motor spindle is accurately ground and is double ended. One end carries a guarded grinding wheel, as shown, and the other, or rear end, carries a guarded wire brush for removal of feather edges or burrs. If desired a wheel may be mounted on the rear end, as well as on the front, for general purpose grinding.

The column of the machine is a heavy iron casting. The knee is supported by a dovetail on the column face, and a gib is provided to compensate for wear. Graduations on the handwheel permit accurate vertical adjustments. The table is supported by a V and a flat guide, each provided with an oil pocket and felt wipers. A hold-down gib prevents tipping. The table is moved backward and forward by a handwheel at the front of the machine and has a travel of 13 in. The table support slide moves on a dovetail on the knee, the slide being gibbed to permit adjustment. The knob for adjusting the distance of the table slide from the face of the column has a graduated collar. The cross-slide has movement of 5½ in. and the vertical slide, 6 in. All slides are protected from grit and dirt by cast-iron aprons. The bench type grinder with fixture weighs 246 lb. net.

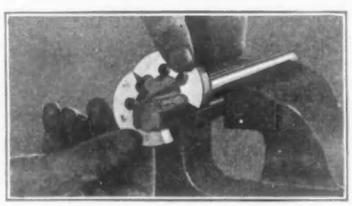


The spindle is double ended, the rear end being equipped either with a wire brush or a second grinding wheel.

"Slip-On" Re-Threading Die Sets

TIME savings are claimed for the new "Slip-On" re-threading dies with ratchet stocks offered by the Greenfield Tap & Die Corpn., Greenfield, Mass., for repairing damaged threads. These dies resemble an ordinary round die that has been cut in half, the two pieces of which are held together by a flat spring on the side of the die. To use the die, it is only necessary to pull the two halves apart, slip the die over the clean, unbruised portion of the thread, drop the ratchet stock over the die, tighten the screws, and back it off over the bruised and torn threads at the end.

These dies are made in all sizes from ¼ to 1⅛ in., inclusive. They



are stocked in several convenient assortments, or may be had singly if desired. Set includes a rachet stock that permits the dies to be used in close quarters.

Improved Truck for Gas Welding Equipment

THE Linde Air Products Co., 30 East Forty-second Street, New York, has brought out a new cylinder truck designed to increase the ease of

moving oxy-acetylene welding or cutting equipment from place to place and to assure firm support for the oxygen and acetylene cylinders, eliminating any possibility of overturning them and breaking the regulators or gages.

The frame is made of 1¼-in. angle iron welded into a rigid unit, and a beveled steel plate welded to it forms the cylinder platform. The handles, made of 1¼-in. pipe, are bolted to the platform and to the upper part of the frame as shown. They may be removed easily, so that the truck when partly dismantled may be shipped or stored in small space. The cylinders are held in position on the truck by means of chains which are adjustable to accommodate cylinders of different sizes.

Cast iron wheels 12 in. in diameter, with 2-in. tires, facilitate handling the truck, especially when swinging it from the upright to the rolling position. The axle is bolted to the frame and may be dismantled conveniently for shipment or storage. This truck, designated as the No. 5, is 48 in. high by 30 in. wide, overall, and weighs 80 lb. It is finished in a durable black enamel.

"Physical Properties of Heat-Treated Cast Iron" is the title of Bulletin No. 47 of the Michigan Engineering Experiment Station, East Lansing, Mich. The authors are F. G. Sefing and M. F. Surls.

Structural Fabricators Discuss New Markets for Steel

Institute Hears of Possibility in Steel-Frame Dwellings—Past Year Has Been Trying for the Industry

THE American Institute of Steel Construction returned to the place where it was organized, Pittsburgh, to hold its tenth annual convention on Oct. 20 and 21. The first day's sessions were devoted to the internal problems of the group, while on the concluding day the addresses and discussions fell under the general heading of new uses and markets for fabricated steel. William A. Irvin, president, United States Steel Corpn., accompanied by Charles L. Wood, vice-president in charge of sales, were interested listeners at the final session.

A number of students from the University of Pittsburgh and Carnegie Institute of Technology were present at the morning session on Friday, Oct. 21, to hear the talk of F. T. Llewellyn, consulting engineer, United States Steel Corpn., New York, outlining the plans of the corporation for issuing a guide book to house builders with an eye to opening up a new outlet for steel. This talk also was responsible for the attendance of a number of steel company officials, part of whose product would find application.

Quota Plan Not Successful

While there was a note of disappointment in the record of the industry for the past year and in the fact that stabilizing efforts embodied in the quota plan, presented at the annual meeting at White Sulphur Springs, W. Va., a year ago and known as the White Sulphur Plan, had to be abandoned because of only partial acceptance by the membership, there was also a common note that the individual members, rather than the institute and what it sponsored, were responsible.

There was a thought, expressed in various ways, that bad as things have been within the industry they might have been infinitely worse if there had been no formal organization and ideals to aim at, even if circumstances prevented their attainment. The feeling of the members toward the institute was illustrated in the unanimous adoption of a resolution empowering the directors to substantially increase the basis of assessment.

The meeting went on record as again favoring of and promising support to the Goss-Bingham bill, which failed of passage at the last session of the Congress; this bill would make mandatory on the part of general contractors the listing of names of sub-contractors in submitting bids.

Must Compete with Lower Capital Charges

Both President Charles N. Fitts and Executive Director Charles F. Abbott in their addresses stressed the leanness of the past year both from the standpoint of tonnage and profits. The president observed:

"Economically, payroll losses are of less importance than capital losses. The first we can restore, but the latter are sacrificed forever and to the continued detriment of business. The corporation weathering a period of depression will find it necessary to compete with the lower capital charge of concerns which will rise again from the ashes of receiverships. This phase of free competition is something to which our Government leaders may well give serious thought. During the period of a temporary depression it has been considered good management to take business at less than cost so long as the loss on such work does not equal the overhead that would accrue were the shop closed.

"American business by and large is today operating at the mercy of the free credit extended us. This situation is a damaging accusation of the narrow policy of our legislators who enact laws to guarantee the freedom of competition, but offer no assistance to those who are forced into bankruptcy because of ruthless competition. Our quarrel is not so much with existing statutes as with the attitude of mind of those charged with interpreting and enforcing these statutes. Pouring Federal funds into new public buildings, extending credit to self-liquidating projects and similar governmental stimulants to construction may result in speeding up work. It fails, however, to provide any guarantee that this work is to be done without loss to the contractor."

Charles F. Abbott also had much to say about competition and the anti-trust laws. He was hopeful that the latter might be clarified by intelligent interpretation or modified to bring them into harmony with modern conditions, but in the final analysis thought that only through education, direct appeals for justice and fairness and the elimination of selfishness and unethical practices could the industry expect profits. Accurate estimating and proposals that included a profit were suggested and that buyers should come to realize that to sell at a profit they should buy at a profit and in that way wipe out the unfair selling schemes which are so disastrous to profitable operation.

Institute to Give Out Statistics

Clyde MacCornack, chairman of the committee on statistics, announced that the Department of Commerce has asked the institute to collect and disseminate the statistics of the industry.

On his recommendation, the suggestion was accepted. Monthly reports will hereafter be issued by the institute.

C. G. Conley, president, Mount Vernon Bridge Co., Mount Vernon, Ohio, answering along with W. M. Wood, president, Mississippi Valley Structural Steel Co., Decatur, Ill., the query: "What's Ahead of the Structural Steel Industry?" thought that the older and established markets for steel construction might not recover soon, but saw promises of relief in new markets. Congestion in living and in traffic would make necessary new types of structures requiring large quantities of steel. Reviewing in detail the older channels for fabricated steels, Mr. Conley thought the railroads, subject to their ability to finance themselves, might rebuild bridges too light for present traffic, build terminals and eliminate grade crossings, but he was not hopeful that the roads would have the money for the next few years. The outlook for industrial buildings and for office buildings he thought poor because of the overbuilt condition of industry and the huge oversupply of office space that now exists. The effort to cut taxes would check the building of highway bridges, and it would be difficult to interest investors in toll bridges, because so many were built that today are not paying. Elevated highways to relieve the congestion of cities, bridges over ravines, streams and rivers to accommodate increasing populations in some areas, the replacement of narrow by wider bridges as traffic increases, hangars, airport buildings and seadromes he pointed out as most likely to create early demands for steel.

Mr. Wood's talk stressed the ill-effects of the suicidal competition which has been rife in the industry. He noted a decline in the consumption of structural steel from 4,000,000 tons in 1929 to approximately 750,000 tons in 1932, but disheartening as this showing was, especially as profits declined in even greater ratio, he was disposed to think that the industry before had been through a period when there was little private work and that some good had resulted from the lean times of the past few years. They had taught economy and efficiency and he ventured the suggestion that as a result the industry might find itself able to make a profit even on a 50 per cent of capacity operation. Both Mr. Wood and Mr. Conley spoke

for greater cooperation and more faith in one another as ways toward more satisfactory markets.

Suggests Policing of the Industry

Along the lines of the addresses of Mr. Wood and Mr. Conley, was that of H. B. Hirsh, Belmont Iron Works, Philadelphia. He thought that, since the competition had taken heavy toll not only of the fabricators' resources but of the earnings of employees, the time was at hand for the policing of the industry either by the Government or some private agency. He presented a vivid analysis of the split-up of the price paid for a ton of fabricated steel. Taking from $55 to $60 as the average prices of structural steel erected, he placed the charges for hauling and erection, including compensation and accident insurance at from $10 to $14; after paying $35 to $36 for the plain material, there remained $10 to $14 to cover all other expenses, not including plant depreciation, insurance and taxes. These items with the invested capital, which he placed at $25 a ton, would be at least 10 per cent on a full plant operation and correspondingly higher as plant engagement went down. Presenting a homely illustration, he did not think that because a man owned a building and the means to burn it down, he should be permitted to do so when the fire might spread to adjoining buildings owned by somebody else.

The second day of the convention was largely a symposium on new uses for steel in constructional work. The exceptions were addresses by J. W. Thomsen, Stupp Brothers Bridge & Iron Co., St. Louis, who talked on the effect of the imports of foreign steel, and J. L. Kimbrough of the Indian Bridge Co., Muncie, Ind., who spoke on the future of the small fabricating shops and expressed the belief that, through changed uses and the decentralization of work, the small shop was in quite as favorable a position as those equipped chiefly for big tonnage jobs. Mr. Thomsen estimated that the imports of steel in the past year had deprived 240,000 workmen of a week's work, and he said that the sale of foreign steel at low prices was seriously impeding recovery in business.

Steel for Dwellings

F. T. Llewellyn described the results of a survey recently made by the steel house committee of the United States Steel Corpn., which indicated a potential demand for one and two-family houses in the United States the equivalent of 300,000 six-room residences per year. If framed of steel, 2,250,000 tons of small rolled shapes per year would be required. It was believed the fabrication of the material would be best suited to the small shops. Mr. Llewellyn announced that a booklet containing rules, tables and illustrative examples shortly would be issued by the Steel Corporation.

Talks on steel floors were given by F. H. Frankland, director of engineering service of the institute, covering tests made by the United States Bureau of Standards; the Belmont interlocking floor, by J. G. Shyrock, chief engineer, Belmont Iron Works, Philadelphia; the Keystone steel beam floor, by Dr. J. H. Young, vice-president, H. H. Robertson Co., Pittsburgh, and the T-Tri-Lok floor, by R. A. Marble, engineer, structural department, Carnegie Steel Co., Pittsburgh. Bennett Chapple, vice-president, American Rolling Mill Co., Middletown, Ohio, described the frameless sheet steel residence recently completed in a Cleveland suburb and one that is to be erected at the World's Fair in Chicago.

It was announced that Chicago had been chosen for the next annual meeting, which will be held in the third week of October, 1933.

C. G. Conley, Mount Vernon Bridge Co., Mount Vernon, Ohio, was elected president. Robert T. Brooks, George A. Just Co., New York, was elected treasurer. Other officers were re-elected.

Iron and Steel Exports and Imports Gained in September

WASHINGTON, Oct. 25.—Small as they were, exports of iron and steel in September, amounting to 36,038 gross tons, reflected an increase of 3083 tons over those of August, while imports of 29,241 tons were an increase of 5618 tons.

In the first nine months of the year outgoing shipments dropped 43 per cent to 443,306 tons from 792,842 tons in the corresponding period last year. Imports did not decline so much, reaching a total of 280,275 tons, against 331,237 tons, a drop of only 15.4 per cent.

An unusual development of the September trade was that Canada was the leading supplier of the United States, furnishing 7605 tons, of which 4390 tons was scrap, 2521 tons was rails and 539 tons was ferromanganese. Canada still led as the source of exports with a bare 7763 tons, giving the United States the narrow balance of 158 tons.

The largest rolled item of outgoing shipments was tin plate. Of the 5100 tons exported, 2085 tons went to China. Scrap exports were 5995 tons, of which 3827 tons went to Japan and 1544 tons to Canada. Japan took 2257 tons of 2313 tons of wire rods exported.

The Netherlands furnished 6043 tons of the 7250 tons of pig iron imported and 583 tons of the 1163 tons of ferromanganese imported. Belgium supplied all of the 1181 tons of reinforcing bars and 961 tons of merchant bars, whose total was 1193 tons. France was the leading source of incoming shipments of structural shapes, supplying 2051 tons of the total of 3109 tons.

Manganese ore imports were only 620 tons, all of which came from Cuba.

Allegheny Steel Offers Rustless Clad Metal

A new metallurgical development by which stainless steel and plain carbon steel are combined in the ingot and rolled together is announced by Harry E. Sheldon, president, Allegheny Steel Co., Brackenridge, Pa. The resulting material is a solid sheet or plate of which 20 per cent is 18-8 chromium-nickel alloy steel and the remainder mild steel. It is claimed that the two are indissolubly bound together and that protracted tests have proved that the bond is unaffected by differences in coefficients of expansion.

The fact that the new material will sell at a base price one-half that of the solid alloy opens up an entirely new field for the corrosion-resisting alloys, Mr. Sheldon believes. It is not expected that the combination sheet will replace the solid alloy in most of its present applications, but rather that many new uses will be at once opened to it. One of these may be the pre-fabricated metal house, progress with which has been awaiting the development of a suitable material at a practicable price.

Another advantage of the combination sheet, in many applications, will be its comparative ease of fabrication. The straight 18-8 alloy, because of its high tensile strength, requires correspondingly increased power to work it. The physical characteristics of the new combination sheet will approach more nearly those of the mild steel which makes up 80 per cent of the sheet.

Officers of the Allegheny company regard this development as of special significance at this time in that they believe it makes possible immediate growth of the alloy industry through expansion into new industries and new uses.

The new process is licensed under the Ingersoll patent No. 1,868,749 and the product is to be called "Allegheny Metal Clad Steel."

OFF THE ASSEMBLY LINE

Chevrolet Buys Steel for 35,000 Cars; Buick and Plymouth Give Releases

DETROIT, Oct. 24.

INDICATIONS are multiplying that the worst of the slump in motor car production is over. While the industry's output this month is expected to be only 65,000 units, or perhaps less, at least three prominent manufacturers are swinging into operations on their new models and within the next two to three weeks others will follow. This increased activity is bringing about a resumption of work by several large parts makers and is reflected in better employment. It likewise has resulted in steel releases by Chevrolet, Buick and Plymouth and the promise of moderate-sized tonnages from these companies during the remainder of this year.

Chevrolet has bought bars, sheets, strip steel and other forms of steel for 35,000 cars for delivery to its local plants and to its Flint, Mich., factory between now and Dec. 1. This completes its buying of steel for its entire fourth quarter requirements, as it earlier contracted for steel covering the needs for 25,000 units. In other words, the releases given steel mills the past week complete the tonnage allotted for the first 60,000 cars of its 1933 line. In addition, Fisher Body Corpn. bought a fair tonnage of sheets for its Cleveland plant, which is devoted exclusively to the manufacture of Chevrolet bodies. These orders supplement those placed with steel mills two weeks ago.

By the end of this week all Chevrolet production plants are expected to be in operation on the new car. The Saginaw foundry, which is making the cylinder blocks, will melt twice as much iron in October as in September and will further accelerate its output next month. All of Chevrolet's assembly plants as well as manufacturing divisions will be in full operation by Nov. 15. Announcement of the car is scheduled for early December.

Although Plymouth had previously made up a few special jobs, the first

Chevrolet has bought steel for 35,000 cars, thus completing purchases of steel for its entire fourth quarter ouput of 60,000 cars.

* * *

Buick, Fisher Body and Plymouth also have given steel releases.

* * *

Plymouth has orders on hand for 10,732 new six-cylinder cars.

cars for dealers came off the production line the past week. Orders have been received from De Soto, Dodge and Chrysler dealers for 10,732 Plymouth cars, even though they have not yet been notified of the price or specifications. Several thousand cars will be shipped this month from the local factory, with relatively heavy production set for November. The first public showing of the car will be late next month. This means that steel releases by Plymouth should be fairly good in the next 30 days.

Casting of the cylinder block for the Plymouth six is being concentrated in the Dodge foundry, whereas formerly the work was divided chiefly between a foundry at Port Huron, Mich., and another at Indianapolis. This is part of the policy of the Chrysler Corpn. of drawing in as much outside production as possible in order to take advantage of its own facilities. It is expected that the two outside foundries will get whatever overflow business may develop. In casting cylinder blocks the Dodge foundry is said to be using well over 50 per cent of scrap in its melt, drawing on its own stocks for this material which it has accumulated in recent months instead of throwing it on the market at the low prevailing prices.

Buick purchased bars, sheets and strip steel the past week for 5000 cars. It is understood that production at Flint is going ahead at a satisfactory rate and that announcement of the new car will be made the middle of November. Buick will be buying forging stock hereafter for Oldsmobile as well as for itself, because Oldsmobile forgings will be made in the Buick plant. Oldsmobile will not begin manufacture, however, until the latter part of next month, with public display of its new car deferred until near show time in January. It still is the intention of General Motors to make Oldsmobile a style leader, so far as design is concerned, and to give it a distinct place between Pontiac and Buick without the latter's light car encroaching on Oldsmobile's price field. Oldsmobile's first steel releases are looked for this week.

The Wilson Foundry & Machine Co. at Pontiac, Mich., subsidiary of Willys-Overland, will begin about Nov. 1 to turn out poppet-valve six-cylinder engines for the new light International Harvester truck. Willys-Overland was to have given further steel releases the past week, but held them up on account of model changes which may not be completed for another month. Dodge will begin production of its new lines early in November. Contrary to early reports that it would make a four, its light car is now expected to be a six. The Dodge line will be restyled so as to put it in a much stronger competitive position than in recent years.

Operations at Ford's Rouge plant continue at a relatively low rate, estimated at 1500 units a day, three days a week. Slight change from this schedule is anticipated in the near future. Steel releases have been negligible. In fact, the steel trade is counting on little tonnage from Ford the remainder of the year. Murray's frame plant at Ecorse is turning out less than 2000 Ford frames a day, two days a week.

Detroit Notes

The Lakey Foundry & Machine Co., Continental Motors subsidiary at

Muskegon, Mich., has bought pig iron for water delivery in sufficient quantity to carry it over the winter season when Lake navigation is closed. Lakey is preparing for a considerable increase in production when it starts to cast cylinder blocks for the new Continental Motors car about Dec. 1. . . . Murray Corpn. has recalled 1200 workers at its local body plants and will slowly get into operation on bodies and chassis parts for new models. . . . Citreon in France is using the one-piece, all-steel body made by the Edward G. Budd Mfg. Co. . . . The demand for quality cars is looking up. Duesenberg has received orders for custom-built cars amounting to $125,000 in the last 10 days and Lincoln's retail sales in the first 10 days of October were 60 per cent ahead of those in the same period of 1931. Marmon has just announced a new line of 16-cylinder cars at reductions up to $925. . . . Great Lakes Steel Corpn. is continuing to run two out of six open-hearth furnaces. . . . The average age of passenger cars in use at the end of this year will be 4.44 years, while at the close of 1929 it was 3.69 years.

OBITUARY

TINIUS OLSEN, a pioneer in the development of testing machinery in the United States, died at his home at Mount Airy, Philadelphia, on Oct. 20. He was founder and until December, 1929, president of the Tinius Olsen Testing Machine Co. He was a native of Kongsberg, Norway, and came to this country 65 years ago. On Sept. 16, 1928, a statue of him was unveiled at his birthplace in recognition of his philanthropy in the city of his birth and his assistance to engineering progress in Norway. The cost of the statue was met by popular subscription in Norway. At that time he had already been tendered many honors, had been knighted by the King of Norway and made a member of the Order of St. Olaf. Mr. Olsen, who was 86 years old, was the oldest living life member of the Franklin Institute, from which he had received the John Scott and Elliot Cresson medals. A son, THORSTEN Y. OLSEN, is president of the Tinius Olsen company.

❖ ❖ ❖

ARTHUR L. DAVIS, vice-president in charge of sales, American Bridge Co., with offices in the Frick Building, Pittsburgh, died suddenly at Atlantic City on Oct. 19, aged 66 years. A native of San Francisco, Mr. Davis received his technical schooling at the Massachusetts Institute of Technology, having been graduated from that institution in 1889. He started his business career with the Central Vermont Railroad, and subsequently became associated with the Vermont Construction Co., St. Albans, Vt. A later connection with the East Berlin Iron Bridge Co., East Berlin, Conn., which was taken over in 1900 by the American Bridge Co., led to a long association with the latter concern. During the ensuing years he served as assistant to J. J. Hatfield, who prior to his death in July, 1931, was president of the bridge company, and later as Eastern contracting manager and then general contracting manager for the country. Mr. Davis, who for years had made his headquarters at 71 Broadway, New York, was appointed vice-president in July, last year, when the company moved its main offices to Pittsburgh.

TINIUS OLSEN

A. L. DAVIS

PERSONAL

EUGENE P. THOMAS has been elected president of the National Foreign Trade Council. He has been identified with the foreign trade of the United States Steel Corpn. for the past 30 years, having been president of the United States Steel Products Co. from 1911 to 1928, when he became vice-president of the United States Steel Corpn. in charge of sales. He has been a member of the council since its organization in 1914. GARDNER L. HARDING has been elected secretary to succeed the late O. K. Davis.

❖ ❖ ❖

D. C. JACKLING, mining engineer, San Francisco, has been awarded the John Fritz Gold Medal for 1933, for notable industrial achievement in initiating mass production of copper from low-grade ores. He is president of a number of mining companies including the Utah and the Nevada Consolidated copper companies. He has been the recipient of a number of medals and in 1930 was awarded the William Lawrence Saunders Gold Medal of the American Institute of Mining and Metallurgical Engineers for achievements in mining.

❖ ❖ ❖

COL. GEORGE M. MORROW, JR., has been elected president of the Goslin-Birmingham Mfg. Co., Inc., Birmingham, to succeed the late Julius Goslin. Colonel Morrow was for the past several years vice-president of the company, in charge of its two plants at Birmingham. He is a graduate of West Point, class of 1906, and was a lieutenant colonel of fifty-sixth field headquarters in the World War.

❖ ❖ ❖

J. S. TRITLE, vice-president and general manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, was elected president of the National Electrical Manufacturers Association at the recent annual meeting of the organization.

❖ ❖ ❖

VICTOR WINDETT, since Jan. 1, 1928, manager of the gas producer division of the Wellman Engineering Co., Cleveland, has resigned, effective Oct. 31.

❖ ❖ ❖

I. L. JENNINGS has been appointed director of sales of the Lamson & Sessions Co., Cleveland, bolt and nut manufacturer, to fill the vacancy caused by the recent resignation of C. H. Longfield as sales manager. Mr. Jennings has assumed the new position in addition to his present duties as vice-president of the company.

❖ ❖ ❖

PHILLIP E. HAGLUND, superintendent open-hearth department, Ford Motor Co., Dearborn, Mich., has resigned and will devote his time to personal affairs.

Steel Institute Urges Relief From Foreign "Dumping"

George H. Charls and Thomas J. Doherty Heard at Washington—Pig Iron Imports Also Assailed

WASHINGTON, Oct. 25—Seeking quick relief from alleged dumping of foreign steel in the American market, President R. P. Lamont of the American Iron and Steel Institute last Friday telegraphed Secretary of the Treasury Ogden L. Mills urging amendment of regulations under the anti-dumping act which would permit the Secretary's office or the Commissioner of Customs to require the taking of anti-dumping bonds on each entry of suspected dumping.

Under existing regulations appraisers only can issue such bonds after publishing notices of suspected dumping. The reason given for the recent revocation of an anti-dumping bond order applying to importers of steel was the failure of appraisers to publish notices of suspected dumping. The proposal of Colonel Lamont, if adopted, would give the Secretary of the Treasury or the Commissioner of Customs authority to require anti-dumping bonds immediately after an investigation caused suspicion of dumping.

The view was expressed by Colonel Lamont that the regulation would discourage dumping from the outset, be more beneficial to the domestic industry and to importers and avoid "long drawn out investigations and still longer drawn out litigation."

The message was sent out the day after domestic steel interests appeared before Commissioner of Customs F. X. A. Eble and in protesting against dumping of steel asked for quick relief.

Bonds Required on Steel from the Saar Basin

Meanwhile the anti-dumping order as it applies to steel channels from the Saar Basin of Germany was reimposed by a regulation issued last Friday. It followed the issuance of a suspected dumping notice by F. J. H. Kracke, New York port appraiser. It was stated here that similar orders will be promulgated against other imports of steel if suspicion of dumping is disclosed.

Protests Made Especially at Continental Shipments

Representatives of the American iron and steel industry appeared last Thursday before Commissioner of Customs F. X. A. Eble and presented evidence that the domestic industry is being injured by importations. Headed by Thomas J. Doherty, tariff counsel, American Iron and Steel Institute, they urged that the bureau make the anti-dumping act immediately effective. The demoralization of the industry and its low rate of profitless operations, with widespread unemployment, were laid partially to incoming shipments at prices which it was declared are lower than the home market values. Protest was made especially against shipments from Continental Europe.

Mr. Doherty proposed that regulations be so amended that bonds be required of importers under section 623 of the Hawley-Smoot act. He claimed that the Secretary of the Treasury has power to apply that section. W. H. Johnstone, representing the Bethlehem Steel Co., urged that the anti-dumping act be made effective at once. He said that action would be only fair to the domestic industry and not unfair to importers.

Importing interests will be heard this week. Request that they be allowed to appear was made by George E. Dix, of New York, representing the Steel Union Co. and other importing organizations.

Called Unfair Competition

At the opening of the hearing, Mr. Doherty said that the domestic iron and steel industry is suffering from unfair competition. Contracts have been let, he declared, for foreign steel because it is impossible for domestic manufacturers to meet the prices quoted. Foreign labor costs are so low, it was said, that American workmen could not live on wages paid abroad. One manufacturer of barbed wire, he stated, has been compelled to close his plant because of foreign competition and the dumping of that product.

Incoming shipments were said to be keeping up in larger quantities relatively than domestic production. Inadequacy of customs regulations were held to be a prime cause of the damage done. It was pointed out that under the anti-dumping act it is necessary to prove reasonable doubt before a complaint can be made.

Commissioner Eble denoted doubt that Section 623 can be applied. He said that before anti-dumping bonds can be required it is necessary for appraisers to publish notices of suspected dumping. Mr. Doherty said he did not think that was "good law."

Figures showing the effect of importations on employment of American workmen were presented by George H. Charls, assistant to Robert P. Lamont, president, American Iron and Steel Institute, and by Mr. Johnstone.

In 1931, Mr. Charls said, 237,000 employees in the iron and steel industry lost a week's work owing to incoming shipments. Estimating that it requires five tons of raw material to make one ton of steel, Mr. Charls said 1931 imports meant a loss of work to 37,000 coal miners and of 55,000 cars of steel and raw material for transportation by the railroads. Pointing out that iron and steel imports in the first six months of 1932 totaled 205,152 gross tons, he said, that at this rate importations of 410,304 tons for the entire year would mean the loss of 17,788,596 man hours.

"Has the domestic industry been compelled to reduce prices?" inquired Commissioner Eble.

"There is a constant pressure by consumers to reduce prices," said Mr. Charls. "It is impossible to meet foreign competition, despite the protective tariff."

Such lines as galvanized and black sheets were declared to be imported and sold in the United States at a landed, duty paid price of $30 a ton under the domestic price. For the purpose of indicating wages paid abroad, Mr. Charls said Belgian workers in the iron and steel industry receive 75c. a day as against the American wage of 33c. per hr. Foreign rollers, it was declared, are paid from $1.75 to $2 a day as compared with the American wage of $8 to $12 a day.

Effort to Provide Employment

Profits in the steel industry have vanished and the principal interest and activity now lie in affording employment, Mr. Johnstone stated. To point out the insufficiency of prevailing tariff duties to protect the domestic industry, Mr. Johnstone referred to that of $4 on structural shapes, equivalent to only 10 per cent of the American price. Domestic structural shapes, he said, sell at about $40 per ton at Atlantic and Pacific seaboard points. Imported shapes, it was said, are delivered, duty paid, at $20 to $22 a ton.

Losses of large American steel companies, Mr. Doherty interjected, are at the rate of $30,000,000 quarterly. The loss of employment also was emphasized by John Hughes, assistant to the president, United States Steel Corpn., who said normal employment in the industry is 900,000. With operations at around 15 per cent it has been severely cut despite efforts to keep as many workers as possible on part-time employment.

Imports of structural shapes in 1931 meant a loss of 942,750 man days to American workers, Mr. Johnstone said. Put in other terms, he said, 7856 men would have been employed last year at half-time but for these imports. The man hours represented

in a ton of finished steel were said to be 39.4, divided as follows: Ore, 6.2; coal, 4.4; limestone, 0.7; steel, 25.8; additional labor, 2.3. To this was added 14.8 included in transportation and labor, making a total of 54.2 man hours which in the case of 1931 structural steel imports meant 3,942,000. Similar calculation, it was said, could be applied to bars and plates with a greater amount of labor in more highly finished lines.

Declares Emergency Exists

"We are faced with dumping," said Mr. Johnstone, "or the sale of foreign steel in the American market at less than the prices in the markets abroad."

The anti-dumping act was said to be an emergency measure.

"An emergency exists now," Mr. Johnstone declared. "Operations are low. There is widespread unemployment. What more could Congress want as implied in the act to prove dumping?"

The anti-dumping act, he said, has been nullified by the "extreme acid test" appraisers apply to it before permitting it to operate. Mr. Johnstone urged that the act should be put into operation pending conclusion of the inquiry by the Treasury Department.

Harry A. Black, Galveston, Tex., manufacturer of barbed wire, said operations are low owing to imports. It has been necessary, he said, to import instead of manufacture. Imported barbed wire was said to be selling at $2.13 per 100 lb., delivered Galveston, as against the domestic price of $2.88, a difference of $15 a ton.

Complains of Pig Iron Imports

Complaint against imports of pig iron was made by John W. Logan, Alan Wood Steel Co., appearing for Eastern pig iron interests. He said that the Netherlands, British India and the United Kingdom have been sending iron to this country and that Japan is now "stepping into the picture." Agents in this country are offering 300,000 tons of pig iron from Japan, he said. Imported iron in 1931 was said to have represented 10 per cent of the sales in Eastern territory, but has risen to 30 per cent in 1932. Duty paid prices at New York, Philadelphia and Boston were given as $12 for Holland and $12.25 for Indian iron, while the Japanese iron price, delivered New Jersey, was given as $11.50.

Domestic Manganese Ore Producers Are Heard

Last Saturday Commissioner Eble heard complaints of domestic manganese ore interests against alleged dumping of that product from Soviet Russia. The commissioner was asked to require anti-dumping bonds of importers not only of Soviet ore, but also against those importing manganese ore from India, Brazil and South Africa.

The request was made by President J. Carl Adkerson of the American Manganese Ore Producers' Association. He likewise asked application of the anti-dumping penalty. He contended it would increase the cost of production of domestic steel by only 14c. a ton. This figure was based on a penalty of 1c. a lb. contained manganese, and the estimate that it requires 14 lb. to make one ton of steel.

Mr. Adkerson submitted figures which he claimed showed that Soviet Russia ore is being sold in this country at less than cost of production. He said he had no evidence of dumping from other countries. At the same time, however, he said, other countries have accumulated large reserves and he expressed apprehension lest it be necessary to liquidate the stocks and market them in the United States for any price producers might be able to get.

Other domestic manganese ore producers supported Mr. Adkerson in claiming that the American industry is greatly depressed with resulting widespread unemployment. They contended that relief requested would restore mining activity and employment. It was also contended that the American ore, after beneficiation, rates higher, with an average of 58 per cent manganese content, than imported manganese ore.

A. A. Djakelie, president of the International Fagban Co., Paris, who said he owned mines in the Georgian district of Russia which the Soviet government had seized, testified as to production costs in Russia. These mines at one time were leased from the Soviet government by the Harriman interests.

Replying to a question by Commissioner Eble, the price of Soviet ore, laid down duty paid, at Pittsburgh, was given as $21.52 a ton. The average cost of production of domestic ore was given as $30.

Tariff Commission Investigation Requested by President

While there is alleged dumping of steel from Continental European countries still on the gold standard, contention is made that the domestic industry is also being injured because of imports from countries of depreciated currencies and for this reason increased interest has been shown in the inquiry of the subject to be made by the Tariff Commission at the request of President Hoover. Chairman Robert L. O'Brien of the Tariff Commission was asked by the President last Friday to begin the investigation. It will be started at once. It has been pointed out by domestic manufacturers that it will not afford the early relief from dumping that is necessary.

Previously Secretary of the Treasury Mills and Mr. O'Brien opposed the Hawley bill designed to offset the effects of depreciated currencies on American markets. They have not denoted whether they have changed their position, but the action taken by the President in ordering an inquiry would indicate that the White House is concerned over the situation. The inquiry, it is said, fits in with hearings to be held before the Senate Committee on Finance. They will go into the question of alleged dumping and the relationship between the practice and depreciated currency. Legislation along the lines proposed in the Hawley bill may result, it is said. The hearings have been proposed by Chairman Smoot and Senator Reed of the Finance Committee.

Importers of steel will appear on Thursday of the present week before Commissioner of Customs Eble to protest against efforts of domestic steel producers to stop alleged dumping.

Marlin-Rockwell Merges Its Sales Activities

Marlin-Rockwell Corpn., Jamestown, N. Y., ball bearing manufacturer, has consolidated sales activities formerly carried on independently by its subsidiaries, Gurney Ball Bearing Division, Jamestown; Standard Steel & Bearings, Inc., Plainville, Conn., and Strom Bearings Co., 4535 Palmer Street, Chicago. Sales are now handled through the executive and general offices of the corporation at Jamestown and through the Eastern district office at Plainville and the Western district office at 2526 South Michigan Avenue, Chicago.

Rail Price Investigation Will Not Be Dropped

WASHINGTON, Oct. 25.—Attorney General Mitchell today said that the inquiry of the Department of Justice concerning the alleged fixing of prices of steel rails will be continued by the Department of Justice. The comment was made when he was asked if the voluntary reduction of $3 a ton made by producers would affect the investigation which centers around alleged restraint of trade under the Sherman law.

The inquiry was begun about two years ago as the result of charges by Senator Couzens of Michigan who took the matter up with the Interstate Commerce Commission. Commissioner Eastman referred the subject to the Department of Justice.

The National Machine Tool Builders' Association will move its offices from Cincinnati to Cleveland on Nov. 1. The new quarters in the latter city will be located at 1220 Guarantee Title Building. Announcement of the change in location has just been made by the board of directors. H. H. Lind, of Cleveland, was recently appointed general manager of the association.

• • EDITORIAL COMMENT • •

"Merchandise Mergers"

ONE of the interesting practices growing out of the depression is the formation of so-called "merchandise mergers," whereby separate companies enter into an agreement to cooperate in making and selling a product without actual financial consolidation.

The Willys-Overland-International Harvester arrangement, by which the former will make a light truck to be sold to the farm trade by the latter, is an example. The recently announced working agreement between the American Radiator Co. and the Petroleum Heat & Power Co. is perhaps an even more striking illustration. These two companies, one the largest manufacturer of domestic heating equipment and the other the oldest maker of domestic oil burners, have pooled their resources and engineering experience to produce a new complete automatic home-heating unit, with boiler and burner combined. However, no financial merger or modification of corporate identities is involved or contemplated.

Metal-working companies might well ponder the possibilities of such contractual relations on their own fortunes. Perhaps for some this means of pooling resources may afford a happy medium between "splendid isolation" with its attendant difficulties and the entangling alliances of actual physical merger which inextricably and permanently bind one company to another. At any rate, it will bear close watching to see whether its apparent benefits will eventually be so great as conjecture now puts them.

• • •

Free Rent For Employing Students

EXISTING conditions are taxing the ingenuity not only of industry, but also of our educational institutions, particularly those specializing in the technical training of young men. The cooperative engineering student strode along a comparatively easy path when industry had ample room to give him employment, but today he finds it increasingly hard to get shop experience and concurrently the money to pay for his education.

Announcement of the plans and purposes of the Lawrence Institute of Technology, recently founded in Detroit, reveals that educational circles are not bankrupt of ideas for meeting the situation. A large number of small factories, selected according to the value of the technical training they can give the students, are to be induced to occupy manufacturing space adjoining the school, being furnished rent and heat free and in return agreeing to employ students.

To prepare the students before they enter these industries, the institute will operate a large contract machine shop. It is estimated that eventually shop earnings should be sufficient to afford free tuition. Overhead expenses of the factories will be held down to a minimum by combining the clerical work of several companies in one office and limiting manufacturing space so that increased business requires two or perhaps three eight-hour shifts. The institute's graduates and students are to be encouraged to establish their own shops there; in fact, the goal is to have all of these factories owned and operated by alumni or students.

Here is an institution which is aiming to give young men a technical education, and to encourage them to assert whatever initiative they possess and set themselves up in business on a small scale. This educational experiment will be watched with interest by industry. Whether or not it is sound economic policy to introduce educational subsidies in competitive industry, the plan is symptomatic of the resolution of technical educators to cope with the changing times.

• • •

Continental Steel Passes British Tariff

PRICES of Continental steel delivered in the British market declined after imposition of duties early this year, and, while they have since advanced, they are still only slightly above prices ruling when there was free importation. Much steel is entering the British market after paying approximately the same duties as are imposed by the allegedly high tariff of the United States.

Iron and Coal Trades Review, London, presents a table showing prices of Continental steel delivered Birmingham, duty paid, covering billets, sheet bars, small bars, beams, angles and plates, 3/16-in., on Jan. 28 of this year when there was no tariff, March 31 when there was a 10 per cent tariff, and June 30 and Sept. 29 when there was 33 1/3 per cent tariff. The six-month period for the higher duty expires Oct. 29, but there is no doubt as to its continuance. On the products mentioned the United States tariff of 20c. per 100 lb. approximates the British ad valorem duty at recent prices.

The British publication shows that prices declined after the imposition of the 10 per cent duty, and on June 30, when there was a duty of 33 1/3 per cent, they were lower than in January when there was no duty, while Sept. 29 they were only slightly higher than in January. Per gross ton prices Sept. 29 were £4 15s. on billets and sheet bars, £5 12s. 6d. on small bars, £5 5s. on beams, £5 12s. 6d. on angles and £5 18s. 9d. on plates 3/16-in. Taking the pound sterling at $3.45, billets and sheet bars would be $16.39 per ton and beams 81c. per 100 lb. While imports have decreased, that is attributed to lessened demand, as the figures of British production show, and it is said: "British makers have certainly not received the degree of protection in the home market which a 33 1/3 per cent tariff on the face of it provides."

It is a matter of Continental steel being dumped at less than production cost for ulterior reasons, to keep plants going to fill gas and electric contracts with municipalities, and to obtain better allocations in cartels.

Steps Taken to Curb Steel Dumping Outlined at Jobbers' Meeting

THE need for more adequate tariff protection against foreign steel was emphasized in two addresses at a meeting of the National Association of Sheet Metal Distributors at the Marlborough-Blenheim, Atlantic City, N. J., Oct. 18. One of these, by G. L. Lacher, managing editor, THE IRON AGE, is reproduced elsewhere in this issue. The other, by Thomas J. Doherty, tariff counsel, American Iron and Steel Institute, was read by George A. Fernley, secretary-treasurer of the association, in the enforced absence of the author, who had been called to a hearing before the Commissioner of Customs at Washington.

In his paper Mr. Doherty explained the origin and operation of the anti-dumping act, and outlined recent steps that have been taken to obtain relief under its provisions. The machinery employed in the administration of the act is cumbersome, inefficient and slow, he said, although this is not the fault of Government officials.

The Treasury Department must have an investigation made abroad by the men it has stationed there, to ascertain the prices at which commodities under inquiry are being sold in the country of origin, since it is necessary to establish a comparison between those prices and the prices at which the goods are sold for export to the United States or to other countries.

"This takes time," declared Mr. Doherty, "and you may be sure there is no active and zealous cooperation from the foreign manufacturers.

"Very often, however, because of the difference in the requirements of different countries there is no merchandise sold in the home country for use there sufficiently like that which is sold for export to be comparable. In those cases it must be established that the product is sold for export to the United States at less than its cost of production. This requires an even more searching and more difficult investigation. But all of these matters have to be gone through before there is a factual basis for a finding of dumping.

"There is a more summary process which does not exactly result in a finding of dumping, but it does result in an order requiring importers to give a bond on each entry of the particular merchandise, and this is what we had on steel for a few days and then it was taken from us.

"At every port of entry in the United States there is an official called the appraiser of merchandise whose duty it is to examine the imported goods, or the statutory percentage thereof, compare the goods with the invoice and see that they are properly described therein, and are properly priced, and that all the other details are given which the law requires.

"Now sometimes this official is active and vigilant and intelligent, and he discovers something that persuades him very strongly that dumping is going on. Whereupon, on his own motion and on the authority conferred by the anti-dumping statute he issues a notice that conveys his suspicion of dumping, and when he does it is sufficient justification under the statute for the Treasury Department to order the taking of a bond on each entry.

"In the case of steel importations that requirement would be sufficiently onerous on the importers as to interfere materially with the volume of importations. The reason is that many of the so-called importers are merely agents of the foreign manufacturers, drawing a compensation when the goods are sold but having no invested capital of their own. Therefore, the giving of a bond or the posting of a bond or collateral would be burdensome. I do not say that all the importers are of that description.

"To explain to you exactly what is going on now, I may say that the Treasury Department is continuing its investigation abroad; it is also closely scrutinizing all invoices of imported steel, and taking it altogether we are having very good cooperation from the Department at Washington."

Mr. Doherty explained that dumping charges had been made by the American Iron and Steel Institute with reference to angles, bars (including concrete reinforcing bars), beams, billets, blooms, channels, joists, plates, rods, sheets, structural shapes, wire nails and wire netting. All invoices on these products, when imported, are being held up by the customs appraisers, that is to say they are not being finally liquidated. Therefore, even under the present conditions the importer does not know how much duty he will finally have to pay.

In opening the meeting of the Sheet Metal Distributors' association, the president, A. W. Howe, the J. M. & L. A. Osborn Co., Cleveland, said the shrinkage of members' business volume since 1929 had been unusually severe but that the turn seemed to be at hand. He cited numerous business indexes which had turned upward and said that it was the duty of members to assist in reestablishing confidence, which is the *sine qua non* of recovery.

The Tin and Terne Plate Committee, the chairman of which is W. N. Deere, N. & G. Taylor Co., Philadelphia, recommended that an advertising program be launched in cooperation with manufacturers to promote the use of terne plate for roofing. The committee's report was unanimously adopted.

Reports of the committees on galvanized and black sheets and on copper and brass brought out lively discussion of the competitive relation between producers and jobbers. The depression has caused producers to accept much smaller orders than in normal times. Mr. Howe voiced the opinion that sheet mills should insist on extra charges for handling small orders. The mills, he said, incur additional costs when they handle less-than-carload shipments and they should charge for the extra cost. He said that it was just as logical to charge extras over prices on carload lots for handling l.c.l. orders as to charge gage extras. The gage extras are charged because certain types of sheets cost more to produce than others. Similarly l.c.l. business costs more to handle than carload business and the extra expense should be borne by the buyer.

The discussion of the report of the copper and brass committee brought out considerable criticism of the present price set-up on non-ferrous sheets. It was contended that the present price structure was so complicated and allowed such a wide margin that price instability was encouraged.

Much interest was manifested in the possibility of expanding sheet metal distributers' lines and thereby increasing their profits. It was announced that Secretary Fernley would send out letters to the members asking them what lines of products they had added in the last two years that had proved profitable and what lines they had thrown out because they had shown a loss.

Sheet Steel House in Cleveland Dedicated

The first frameless steel house completed in a Cleveland suburb was dedicated Oct. 12 with an address by Charles R. Hook, president, American Rolling Mill Co., Middletown, Ohio. The house is constructed entirely from sheet steel. The floors and walls were factory assembled in large sections and hauled to the site in trucks. The metal sections were welded together, forming a structure of strength and rigidity without the use of a structural frame. The outer walls were then given an overcoat of insulating material and covered with porcelain enamel shingles.

The house was erected as an experiment by Insulated Steel, Inc., Cleveland, in cooperation with the American Rolling Mill Co. and other suppliers of material.

SUMMARY OF THE WEEK'S BUSINESS

Automobile Companies Order More Steel as General Demand Slackens

Ingot Output Eases to 19 Per Cent of Country's Capacity—Uncertainty as to Election Result Affecting Situation—Sheets Weaken

EXCEPT for larger orders from some of the automobile companies, steel business has made no further headway, a situation generally ascribed to uncertainty as to the outcome of the Presidential election and the effect that a change of administration may have upon recovery.

Ingot production for the country has eased off to about 19 per cent of capacity, despite the fact that there have been increases in tonnage in a few lines. A leading producer's bookings of bars were the largest for any week since June; structural steel releases against old contracts are increasing and lettings were 16,000 tons, or double those of the previous week; sheet and strip mill schedules have gained somewhat from motor car orders, and tin plate production is holding at 45 per cent. Miscellaneous business, however, has slackened.

The reduction of $3 a ton in the price of steel rails, announced by the United States Steel Corpn. and followed by other producers, is not expected to produce much immediate rail tonnage, but will assist the railroads in figuring their 1933 budgets. The Illinois Central has stated that it will buy 6000 tons, but its order will not be placed until the end of the year, nor are other roads likely to buy before that time. Total sales of rails for 1933 delivery undoubtedly will be far below normal.

THAT the directors of the United States Steel Corpn. look for extensions of recent business gains may be assumed from their action Tuesday in declaring the usual preferred dividend, notwithstanding that the company's loss in the third quarter was the largest ever experienced. The corporation's output of ingots has increased in every month since July, starting with 11.8 per cent of its capacity in that month, 12.1 in August, 16.2 in September and 16.6 in the first half of October. Its output in July, August and September was below that for the industry as a whole, as computed by the American Iron and Steel Institute.

WITH three automobile manufacturers—Chevrolet, Buick and Plymouth—now engaged in production of new models, steel releases from these sources have been the largest in months. Purchases of the Chevrolet and Fisher Body companies for the new Chevrolet car have totaled 25,000 tons in the past week, which, added to 15,000 tons placed earlier, covers requirements for the fourth quarter output of 60,000 cars. Steel orders of lesser volume have also come from Buick and Plymouth.

Parts makers in the Detroit territory are busier, and some low-priced contracts they have taken have resulted in increased pressure on steel quotations. There has been strong resistance from makers of bars and small shapes, but sheet prices have weakened. No. 24 hot-rolled annealed sheets are generally available at the September price of 2.10c., Pittsburgh, which makers attempted to raise $2 a ton at the beginning of this quarter. Light and heavy cold-rolled sheets, steel furniture stock and some other grades are easier in price. Forging billets have been reduced $2 a ton at Pittsburgh and Chicago.

Foundry pig iron is 25c. a ton lower at Philadelphia, a reflection of the continued competition from abroad, particularly Holland. Some grades of scrap have weakened, but there has been no further decline in heavy melting steel in the principal markets.

THE IRON AGE composite price for finished steel, affected by changes in rails and sheets, has declined to 1.948c. a lb. from 1.977c. last week, and is now at the lowest level since March, but is still above its low point of the year. The pig iron composite price is now $13.59 a ton, compared with $13.64, in effect since mid-August, while steel scrap is unchanged at $7.58 a ton.

THE Bureau of Customs, Treasury Department, has ordered that anti-dumping bonds be required from importers of steel channels from the Saar Basin, possibly foreshadowing similar action with respect to other steel products that are being sold in this country in alleged violation of the anti-dumping act. Meanwhile, the president of the American Iron and Steel Institute has appealed to the Secretary of the Treasury to urge amendment of the anti-dumping statute so that the Government "may require the taking of a bond on each entry where the commissioner of customs has good reason to believe that dumping is being practiced." The institute officially protested against dumping of European steel at hearings in Washington last week, and importers will offer rebuttal on Thursday of this week. Domestic producers of pig iron and manganese ore have also urged the application of anti-dumping bonds to protect their industries.

Continental steel prices have been slowly rising for weeks as a result of increasing business at home and abroad. Some Belgian mills are sold up to the end of the year. Great Britain has extended its iron and steel tariffs for two years, subject to a complete reorganization of the industry.

▲▲▲ A Comparison of Prices ▲▲▲

Market Prices at Date, and One Week, One Month and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

	Oct. 25, 1932	Oct. 18, 1932	Sept. 27, 1932	Oct. 27, 1931
Per Gross Ton:				
No. 2 fdy., Philadelphia	*$13.59*	$13.84	$13.84	$15.76
No. 2, Valley furnace	14.50	14.50	14.50	16.00
No. 2 Southern, Cincinnati	13.82	13.82	13.82	14.69
No. 2, Birmingham	11.00	11.00	11.00	12.00
No. 2 foundry, Chicago*	15.50	15.50	15.50	17.00
Basic, del'd eastern Pa.	13.50	13.50	13.50	16.75
Basic, Valley furnace	13.50	13.50	13.50	15.00
Valley Bessemer, del'd P'gh	16.89	16.89	16.89	18.26
Malleable, Chicago*	15.50	15.50	15.50	17.00
Malleable, Valley	14.50	14.50	14.50	16.50
L. S. charcoal, Chicago	23.17	23.17	23.17	25.04
Ferromanganese, seab'd carlots	68.00	68.00	68.00	85.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Rails, Billets, etc.

Per Gross Ton:				
Rails, heavy, at mill	*$40.00*	$43.00	$43.00	$43.00
Light rails at mill	32.00	32.00	32.00	34.00
Rerol'ing billets, Pittsburgh	26.00	26.00	26.00	29.00
Sheet bars, Pittsburgh	26.00	26.00	26.00	29.00
Slabs, Pittsburgh	26.00	26.00	26.00	29.00
Forging billets, Pittsburgh	*31.00*	33.00	33.00	35.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.60	1.60	1.60	1.60

Finished Steel

	Cents	Cents	Cents	Cents
Per Lb. to Large Buyers:				
Bars, Pittsburgh	1.60	1.60	1.60	1.60
Bars, Chicago	1.70	1.70	1.70	1.70
Bars, Cleveland	1.65	1.65	1.65	1.65
Bars, New York	1.95	1.95	1.95	1.93
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Chicago	1.70	1.70	1.70	1.70
Tank plates, New York	1.898	1.898	1.898	1.88
Structural shapes, Pittsburgh	1.60	1.60	1.60	1.60
Structural shapes, Chicago	1.70	1.70	1.70	1.70
Structural shapes, New York	1.86775	1.86775	1.86775	1.85½
Cold-finished bars, Pittsburgh	1.70	1.70	1.70	2.10
Hot-rolled strips, Pittsburgh	1.45	1.45	1.45	1.50
Cold-rolled strips, Pittsburgh	1.90	1.90	1.90	2.05

Finished Steel

	Oct. 25, 1932	Oct. 18, 1932	Sept. 27, 1932	Oct. 27, 1931
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Hot-rolled annealed sheets, No. 24, Pittsburgh	*2.10*	2.20	2.10	2.40
Hot-rolled annealed sheets, No. 24, Chicago dist. mill	*2.20*	2.30	2.20	2.50
Sheets, galv., No. 24, P'gh	2.85	2.85	2.75	2.90
Sheets, galv., No. 24, Chicago dist. mill	2.95	2.95	2.85	3.00
Hot-rolled sheets, No. 10, P'gh	1.55	1.55	1.55	1.70
Hot-rolled sheets, No. 10, Chicago dist. mill	1.65	1.65	1.65	1.80
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Wire nails, Chicago dist. mill	2.00	2.00	2.00	1.95
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Plain wire, Chicago dist. mill	2.25	2.25	2.25	2.25
Barbed wire, galv., Pittsburgh	2.60	2.60	2.60	2.55
Barbed wire, galv., Chicago dist. mill	2.65	2.65	2.65	2.60
Tin plate, 100-lb. box, P'gh	$4.75	$4.75	$4.75	$4.75

Old Material

Per Gross Ton:				
Heavy melting steel, P'gh	$9.50	$9.50	$9.75	$10.12½
Heavy melting steel, Phila.	7.25	7.25	7.25	8.00
Heavy melting steel, Chicago	6.00	6.00	6.25	8.00
Carwheels, Chicago	7.00	7.00	7.00	9.00
Carwheels, Philadelphia	9.50	9.50	10.00	12.00
No. 1 cast, Pittsburgh	10.00	10.00	10.00	10.00
No. 1 cast, Philadelphia	9.50	9.50	9.50	11.50
No. 1 cast, Ch'go (net ton)	6.25	6.25	6.25	8.50
No. 1 RR. wrot., Phila.	7.50	7.50	7.50	10.00
No. 1 RR. wrot., Ch'go (net)	4.50	4.50	5.50	6.50

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt	$1.75	$1.75	$2.00	$2.40
Foundry coke, prompt	2.75	2.75	2.75	3.50

Metals

	Cents	Cents	Cents	Cents
Per Lb. to Large Buyers:				
Lake copper, New York	*5.75*	6.25	6.37½	7.37½
Electrolytic copper, refinery	*5.25*	6.00	6.00	6.75
Tin (Straits), New York	*23.50*	24.30	24.50	22.87½
Zinc, East St. Louis	*3.00*	3.05	3.25	3.25
Zinc, New York	*3.37*	3.42	3.62	3.60
Lead, St. Louis	2.90	2.90	3.25	3.62½
Lead, New York	3.00	3.00	3.30	3.75
Antimony (Asiatic), N. Y.	*5.60*	5.62½	5.62½	6.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

▲ ▲ ▲

▲▲▲ The Iron Age Composite Prices ▲▲▲

	Finished Steel	Pig Iron	Steel Scrap
Oct. 25, 1932	1.948c. a Lb.	$13.59 a Gross Ton	$7.58 a Gross Ton
One week ago	1.977c.	13.64	7.58
One month ago	1.965c.	13.64	7.75
One year ago	2.008c.	15.00	8.71
	Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products make 85 per cent of the United States output.	Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	Finished Steel		Pig Iron		Steel Scrap	
	High	Low	High	Low	High	Low
1932	1.977c., Oct. 4	1.926c., Feb. 2	$14.81, Jan. 5	$13.59, Oct. 25	$8.50, Jan. 12	$6.42, July 5
1931	2.037c., Jan. 13	1.945c., Dec. 29	15.90, Jan. 6	14.79, Dec. 15	11.33, Jan. 6	8.50, Dec. 29
1930	2.273c., Jan. 7	2.018c., Dec. 9	18.21, Jan. 7	15.90, Dec. 16	15.00, Feb. 18	11.25, Dec. 9
1929	2.317c., April 2	2.273c., Oct. 29	18.71, May 14	18.21, Dec. 17	17.58, Jan. 29	14.08, Dec. 3
1928	2.286c., Dec. 11	2.217c., July 17	18.59, Nov. 27	17.04, July 24	16.50, Dec. 31	13.08, July 2
1927	2.402c., Jan. 4	2.212c., Nov. 1	19.71, Jan. 4	17.54, Nov. 1	15.25, Jan. 11	13.08, Nov. 22

Pittsburgh Steel Market Listless as Election Results Are Awaited

PITTSBURGH, Oct. 25.—Prospect of rail tonnage and continued lettings of structural steel and reinforcing bars are the only outstanding features of a rather listless steel market. The principal consuming industries seem to have settled down to a quiet wait for the outcome of the election, and the steel companies in turn are making no further commitments in purchases of raw materials.

The local rail mill is scheduled for resumption next week, but otherwise little change in the rate of steel operations here can be expected before Nov. 8. The railroads are slow in placing orders for car repair work for which money is being lent to them by the Reconstruction Finance Corporation, and many large structural projects are similarly affected.

Automotive purchases are confined principally to two large producers, and further tin plate releases are withheld pending announcement of the 1933 price.

Steel ingot production in the district is barely holding its own at about 17 per cent of capacity, with one large interest running at a lower rate. The smaller companies are maintaining their schedules on the basis of the immediate requirements of consumers. Activity at Youngstown is slightly lower, with the district scheduled at about the same rate as Pittsburgh, while Wheeling production is holding its own at the recent comparatively high level. This is occasioned by well sustained operations of tin mills.

Although the reduction of $3 a ton in the price of rails is expected to develop some tonnage in the next month, no tangible results are yet in evidence. No. 24 hot-rolled annealed and light and heavy cold-rolled sheet prices have again weakened and are quotable at the levels that prevailed in September. Some other finishes of sheets are also weak, but galvanized material is well held despite the fact that more tonnage of this class is coming out than any other form of sheet steel. Prices on bars, plates and shapes are very well maintained, and strip steel is holding in the absence of large tonnage buying.

Raw materials markets are particularly dull, with no scrap purchases reported. Pig iron is characteristically dull, and warm weather has adversely affected sales of heating coke.

Pig Iron

Following the placing of a fair tonnage of iron last month, buyers in this district seem to have withdrawn from the market, and current sales are confined to carload lots. Prices are holding on this type of business in both Pittsburgh and the Valleys, although some shading is encountered in competition with Lake furnaces. The merchant furnace at Sharpsville, which has been in operation for several weeks, has been banked.

▲ ▲ ▲

Reduction of $3 a ton on rails has not yet brought any new business.

* * *

Railroads also slow to place material for car repairs.

* * *

Principal consuming industries seem to be awaiting results of election.

* * *

Ingot output fairly steady, but is showing no further gains.

▼ ▼ ▼

Semi-Finished Steel

Shipments to non-integrated makers of sheets, strips and tin plate are running ahead of those of September, but no new buying of billets, slabs and sheet bars is reported. Prices are nominal at $26, Pittsburgh, with forging billets commanding the usual $5 premium. Wire rods are well maintained at $37, Pittsburgh or Cleveland.

Rails and Track Accessories

Reduction in the price of heavy steel rails from $43 to $40 a ton, the first change in 10 years, was naturally the outstanding development in this market during the last week. The move is generally believed to represent a frank effort on the part of mills to stimulate buying by the carriers, but no tangible results are yet evident. Placing of a tonnage of rails and accessories by the Norfolk & Western was the last purchase of importance, and no definite new inquiry has appeared. The local rail mill is accumulating a little miscellaneous tonnage, and plans to go into production in the near future. Prices on track accessories are unchanged.

Bars, Plates and Shapes

Improvement in releases this month has hardly been as noticeable as was the case in September. Structural steel awards are holding up fairly well, and new inquiry for Government projects is still appearing. Nevertheless this tonnage is slow to reach mills, as well as fabricating shops, and much of it will not be rolled until after the first of the year. The reinforcing bar business is considered good for this season of the year, owing to the continuance of road building activity through the winter. The Carnegie Steel Co. has booked 3000 tons of bars for a sewer at Louisville, Ky. Orders and inquiry for sheet steel piling are also heavier, and a fair tonnage has been booked in the last week. The barge market is quiet, although quite a lot of inquiry is before the trade. An oil company has placed a barge requiring 200 tons of plates. Merchant bars are rather quiet, although demand from small manufacturing consumers is holding up. The automobile industry is doing little buying, and this has also affected movement of alloy steel material.

Prices are unusually well maintained, with the market on bars, plates and shapes generally quotable at 1.60c., Pittsburgh.

Bolts, Nuts and Rivets

Improvement in specifications has been rather large this month, as makers are beginning to feel the effects of railroad car repair work placed recently. Production has risen to about 20 per cent of capacity, the highest rate since spring. Prices are holding.

Cold-Finished Steel Bars

Demand shows considerable improvement over September. The specifications of one large producer have practically doubled, and others show considerable gains. Releases from a few automobile builders are responsible for part of this improvement, but much of the demand is coming from smaller users and jobbers. The price is well maintained at 1.70c., Pittsburgh, for lots of 10,000 to 19,999 lb., to be shipped to one destination at the same time.

Sheets

Although sheet production declined slightly last week, current schedules are a little heavier and the average for the industry is just under 25 per cent. Galvanized material is in the best demand, with mills engaged at better than 30 per cent. Full finishing departments are getting little tonnage, but releases from the automobile trade are heavier than they were last month. Steel for car repair work is slow to reach mills, even though a

number of the carriers have already been granted loans for activity of this sort.

The price structure is still weak on some finishes, particularly hot-rolled annealed sheets, which are again quotable at 2.10c. to 2.20c. Light cold-rolled sheets are also weaker in sympathy with automobile body material, which is rather freely available at 2.65c., Pittsburgh. Long ternes going to the automobile trade are also weak, but mills continue to quote 2.80c., Pittsburgh. Prices on galvanized sheets are rather well maintained in most sections of the country at 2.85c.

Tin Plate

Production this week is barely holding to last week's level, although still averaging about 45 per cent of capacity. A part of this activity is attributable to anticipatory orders placed earlier in the month by a large can company, although some makers which did not share in this business are still running at a fair rate. Current specifications are light as the 1933 price is not expected to be announced until next month, and consumers are reluctant to place orders before that time.

Strip Steel

Business continues to show mild improvement, but shipments thus far in the month have not shown much of a gain over those of September. Releases from the automobile industry are confined to two or three large consumers, and small miscellaneous users are not increasing their requirements further. Operations average 15 to 20 per cent of capacity on hot-rolled material, while cold-rolled mills are not so busy. Prices are unchanged at recent levels, although the 1.90c., Pittsburgh, price on cold-rolled material is gradually disappearing.

Coke and Coal

Demand for heating coke has fallen off because of warmer weather, and the other grades are characteristically quiet. Foundry material is moving at about the same rate as it did last month, and sales of furnace coke are largely in small lots for miscellaneous uses. Although the price of this grade has fallen as low as $1.75, Connellsville, in some instances, business is still being done at $1.90 and $2, and at even more in some instances. The coal market is dull, although both railroad and industrial demand is better than it was last month.

Tubular Goods

Improvement in pipe shipments is slow but steady. Several large producers report a moderate gain over the preceding month, and all are doing much better than they were during the summer. Standard pipe is accounting for much of the increase, as oil country goods are quiet, and there is no demand for line pipe. Commercial boiler tubes are comparatively active.

Wire Products

Specifications are holding their own, but improvement in demand is limited. Smaller manufacturing consumers are taking slightly larger tonnages, and jobbers are showing more willingness to increase their stocks, particularly in the South. Prices are well maintained, with nails quoted at $1.95 a keg, Pittsburgh, and manufacturers' wire at 2.20c., Pittsburgh.

Scrap

In the almost total absence of buying during the last week, scrap prices are generally unchanged in this district. Dealers are able to buy heavy melting steel at as low as $9 to cover old orders, and such offerings as are being made are quickly absorbed. With little distress material appearing, prices seem likely to remain unchanged until mill purchases establish new levels. Foundry grades are just as quiet as steel works material, with buyers generally unwilling to make forward commitments.

Buffalo Pig Iron Market Quiet; Scrap Also Dull

BUFFALO, Oct. 25.—The pig iron market has quieted down following recent large purchases, but shipments are continuing at a good rate. An inquiry for 1000 tons of foundry iron for eastern Pennsylvania is reported this week. Seaboard prices continue to be subject to very severe competition. The district base of $16 appears to be firm. Three furnaces continue to produce iron here, two of them being on basic.

Steel

Republic Steel Works is operating two open-hearths this week, this being the first time in several months that the local Republic plant has had continuous operation for longer than seven days. The present run will be for at least two weeks and possibly longer. Bethlehem continues to operate four open-hearths and Wickwire Spencer one. Hope is expressed here that the $3 a ton cut in rail prices will result in business being placed for rolling at Lackawanna. The rail mill there has been idle almost continuously since last spring. Sheet production continues at about a 20 per cent rate, with wire works operating at 25 per cent of open-hearth capacity.

Scrap

Sale of the scrap resulting from the dismantling of the 90-mile trolley line of the Buffalo & Erie Railroad Co. was the principal development in the local scrap trade last week. The American Steel & Iron Co., Boston, submitted the high bid, one of $78.700 for the material, which includes about 8500 tons of rails, 300 tons of copper wire and smaller quantities of tie plates and other steel. Bidding started at $50,000 and was continued until the final figure was reached. The sale is subject to court confirmation. Scrap sales are at low ebb. Prices are unchanged. Shipments are holding up fairly well on contracts.

Large Rail Order Placed by Canadian Government

TORONTO, Oct. 25.—A dispatch from Montreal stated that the Dominion Iron & Steel Corpn., Sydney, N. S., has received a contract from the government for 150,000 tons of rails and will commence rolling this month. The order, according to officials of the company, will be stretched out for the purpose of giving employment to as large a number of employees as long as possible throughout the winter.

Reinforcing Steel

Awards 5700 Tons—New Projects 3700 Tons

AWARDS

State of New Jersey, 500 tons, bridge across Hackensack River at Little Ferry and Ridgefield Park, to an unnamed broker; Rodgers & Hagerty, Inc., New York, general contractor.

Pine Plains, N. Y., 108 tons, school, to Truscon Steel Co.

Jacksonville, Fla., 331 tons, post office, to Connors Steel Co.

Louisville, Ky., 3000 tons, sewer project, to Carnegie Steel Co., through Builders Supply Co., general contractor.

Cincinnati, 660 tons, post office, to Pollak Steel Co.

Defiance, Ohio, 200 tons, highway bridge, to Fort Wayne, Ind., distributer.

Niles, Ohio, 100 tons, highway bridge, to Truscon Steel Co.

Chillicothe, Ohio, 125 tons, reformatory building, to Truscon Steel Co.

Fresno, Cal., 100 tons, Belmont Park tower, to Kyle & Co.

San Francisco, 200 tons, municipal aquatic park, to Soule Steel Co.

Los Angeles, 305 tons, San Gabriel Dam, to Truscon Steel Co.

NEW REINFORCING BAR PROJECTS

New York, 100 tons, 205th Street viaduct; bids in, President, Borough of Bronx.

New York, 137 tons, nurses' quarters, Veterans' Administration Hospital in Bronx; bids in.

State of Ohio, 1000 tons, Brook Park bridge, Cleveland.

Omaha, Neb., 1000 tons, post office and Federal building.

Chicago, 1000 tons, building for World's Fair.

State of California, 279 tons, State highway structures at Venice and Hueneme; bids close Nov. 9.

State of Oregon, 113 tons, State highway structures in various counties; bids close Nov. 2.

Railroad Equipment

Midland Terminal is considering purchase of two 2-8-2 type locomotives.

Pennsylvania Railroad has ordered 1800 steel freight car doors from Youngstown Steel Door Co. for use on 925 box cars under construction in the Pennsylvania's shops.

Chicago Steel Output Is Maintained Although Demand Is Less Buoyant

CHICAGO, Oct. 25.—Ingot output in this district is holding at 18 per cent of capacity, but shipments of finished steel are slightly lighter as one mill is again stocking some raw steel. Practically all sellers find that a greater variety of mill products is being sought, but the aggregate tonnages, both in sales and specifications, vary little from week to week.

Effects of the reduction of the rail price cannot yet be determined. The Illinois Central has signified its intention of buying 6000 tons, but will not place orders until the turn of the year. Other railroads are figuring more actively and sellers are hopeful that some tonnage will reach their books this fall. In the meantime track accessory shipments are more than 100 per cent heavier than rail shipments. The usual ratio is about 1 ton of supplies to 3 tons of rails.

Steel prices on the whole are reasonably stable. Weakness has developed in black sheets, which are now quoted 2.20c. to 2.30c., Chicago mill, and schedules are not being held on galvanized sheets for delivery to Texas and the Southwest. The local scrap market lacks firmness. Demand is light, and dealers are unable to arrange boat shipments of the tonnages that have been accumulated on docks.

Pig Iron

Shipments of Northern foundry iron continue their slow upward trend and, for the district as a whole, are now 15 per cent of normal for this time of year. New buying, while not diminished, is not growing in volume and fresh inquiries point only to a continuation of the present rate. Michigan stove foundries, which for a number of weeks have experienced a good run of repair work, are now curtailing output.

Billets

Forging billets are now being quoted at $31 a ton, a reduction of $2. This change again brings this commodity to a price $5 a ton above rerolling billet quotations. Though no large tonnages are involved, demand for forging quality billets is moderately improved.

Bars

Consumers' support of this market has varied little in recent weeks, and there is no material change in sight. While the tonnage has remained practically stationary, there is a change

▲▲▲

Ingot output in the Chicago district is holding at 18 per cent of capacity.

* * *

Rail buying has not yet responded to recent price reduction. Meanwhile shipments of track accessories are twice as large as rail deliveries.

* * *

Scrap market lacks firmness as demand lags.

▼▼▼

with respect to a greater variety of bar mill products that are now being demanded. Releases by farm implement manufacturers are larger, but the limited operating schedules that they tentatively promised for the fall months have not materialized in a broad sense. Users of rail steel bars remain in the market in a limited way.

Rails and Track Supplies

There is a general feeling in the Chicago trade that the $3 a ton reduction in the price of rails has cleared the deck for a more active market. Whereas a few weeks ago it seemed quite likely that most purchases would be deferred until early next year, it is now likely that some tonnage will be added to mill books in the near future. Close attention is also being given to track accessory prices. Prices for spikes have recently been reduced and revisions of quotations on splice bars are probable. The new price for rails is applicable on all unshipped portions of old contracts.

Plates

This market remains listless except for a few scattered water works projects, financing for which is being extended by the Reconstruction Finance Corporation. Here and there in the oil industry a new cracking still has been ordered and a unit of this kind is to be built in this country for shipment to Japan. The meager size of orders from railroad shops indicates that for the most part only minor repairs are being undertaken at this time.

Cast Iron Pipe

Most sellers now concede that in the Northern States the near approach of cold weather precludes the possibility of any material revival in this market. Wilmette, Ill., will soon issue its water plant plans, which, it is said, now include an additional item of 1400 ft. of 16-in. pipe. Hartland, Wis., will buy 33,000 ft. of 4 to 8-in. Class C pipe.

Bolts, Nuts and Rivets

There has been a moderate improvement in specifications, reversing the trend of a week ago, and it now appears that October shipments will be about equal to those of September. Releases are again coming from some of the farm implement makers.

Reinforcing Bars

Bids were opened Oct. 26 on 1500 tons of steel for road slabs and 500 tons for bridges and culverts for the State of Illinois. Recent awards were all small and included several post offices, several buildings for the World's Fair and a sprinkling of road work left over from old general contracts. Opinion here is that the bars for the Hoover Dam will be placed with mills to the west of Chicago.

Structural Material

Miscellaneous bridge work in Illinois and neighboring States calls for more than 13,000 tons. The placing of the steel contract for the Chrysler Building about closes out the heavier steel needs for the World's Fair.

Wire Products

It is reported here that the 22,000 tons of cables needed for the Golden Gate bridge, San Francisco, has been placed with an Eastern maker. The level of demand for wire products in general is unaltered. October shipments will top those of September by a very small margin.

Sheets

A moderate increase in full finished sheet demand is the only important change in this market in recent days.

Scrap

A local mill is continuing its policy of picking up a few thousand tons of heavy melting steel from time to time. The transaction this week brought $6 a ton, delivered. Otherwise this market has been unusually dull, and prices on the few carlots placed lean definitely to the weaker side. Dealers who have accumulated borings on a local dock have refused offers made by Lake Erie consumers. Although some heavy melting steel is also on docks, opinion is that water shipments from Chicago will not be made this fall.

Eastern Pennsylvania Iron and Steel Trade Has Slackened

Government Projects Provide Tonnage as Miscellaneous Steel Demand Slackens—Pig Iron Declines

PHILADELPHIA, Oct. 25.—The market for steel has shown a further slight slackening. Political uncertainty is assigned as one reason and the belief is expressed that the trade will mark time until after election. Some of the Government projects have begun to reach mills and have given a bright spot to an otherwise drab picture. The railroads continue to delay further bookings in connection with car building and repair programs, but it is still hoped that additional awards soon will be forthcoming.

Ingot output remains at 14 per cent of capacity. Two plate mills probably will be started this week to roll light tonnages that have accumulated.

Pig Iron

Orders have eased off to lots ranging from carloads to 100 tons. Practically all of the bookings are for foundry grades. These grades have shown a decline of 25c. a ton. No. 2 plain now is quoted at $12.75 to $13, furnace. The purchase by a Reading, Pa., melter last week is understood to have involved 7500 tons of gray forge iron, somewhat more than first reported. Basic iron still is quoted at $13.50, delivered eastern Pennsylvania.

Plates, Shapes and Bars

Mills report that the past week saw lighter business than the week preceding. Government projects, however, are beginning to reach them and have aided schedules somewhat. The Reading Railroad has not as yet placed its remaining requirements of about 1500 tons in connection with its car repair program. It has distributed about 2000 tons so far, all of it going to eastern Pennsylvania mills. The Pennsylvania Railroad has placed only an unimportant tonnage for the 1285 cars it is to build, requiring about 9000 tons of plates and 6000 tons of shapes. The Baltimore & Ohio has not indicated when it will enter the market for steel for the 820 all-steel gondola cars it is to build in its shops. It will also repair locomotives and cars. The Navy Department will take bids Dec. 14 for cruiser No. 39, requiring 7000 tons of plates and shapes.

Pipe

Only light demand is coming to producers. The Customs House in Philadelphia, bids for which will be received Nov. 16, will call for 2537 tons, of which 2450 tons will be 18-in. pipe.

Imports

The following iron and steel imports were received here last week: 6513 tons of pig iron from Netherlands, 487 tons of chrome ore from South Africa, 203 tons of pig iron from British India, 101 tons of structural shapes, 66 tons of steel bars, 42 tons of window shapes and 9 tons of steel bands, all from Belgium; 100 tons of ferromanganese from Norway, 5 tons of steel strips from Germany and 1 ton of steel strips from England.

Scrap

The market remains quiet, with only intermittent sales of small lots. The general price structure is unchanged. Stove plate has eased off 50c. a ton as the result of a sale, while specification iron and steel pipe has moved up $1.

British Iron and Steel Duties Renewed for Two Years

Extension of Tariffs Is Subject to Putting Plan in Force for Reorganizing the Industry

LONDON, ENGLAND, Oct. 24 (*By Cable*).—Iron and steel duties have been renewed for two years from Oct. 25, subject to satisfactory progress being made in preparation of a plan for reorganization of the industry and in putting an approved plan into force.

British Prices, f.o.b. United Kingdom Ports

Per Gross Ton

Ferromanganese, export	£9		
Billets, open-hearth	£4 17s. 6d.	to	£5 7s. 6d.
Black sheets, Japanese specifications	£9 12s. 6d.		
Tin plate, per base box	16s.	to	16s. 3d.
Steel bars, open-hearth	£7 17½s.	to	£8 7½s.
Beams, open-hrth.	£7 7½s.	to	£7 17½s.
Channels, open-hearth	£7 12½s.	to	£8 2½s.
Angles, open-hearth	£7 7½s.	to	£7 17½s.
Black sheets, No. 24 gage	£8 5s.		
Galvanized sheets, No. 24 gage	£10		

Continental Prices, f.o.b. Continental Ports

Per Metric Ton, Gold £ at $4.86

Billets, Thomas	£2 1s.	to	£2 2s.
Wire rods, No. 5 B.W.G.	£4 10s.		
Black sheets, No. 31 gage, Japanese	£11 5s.		
Steel bars, merchant	£2 12s.		
Beams, Thomas	£2 5s. 6d.		
Angles, Thomas, 4-in. and larger	£2 11s.		
Angles, small	£2 13s.		
Hoops and strip steel over 6-in. base	£3 2s. 6d.	to	£3 5s.
Wire, plain, No. 8	£5 7s. 6d.		
Wire nails	£5 10s.		
Wire, barbed, 4-pt. No. 10 B.W.G.	£8 15s.		

Pig iron business is improving, and some small export sales have been made. Steel demand is slow generally, but a few moderate-sized Canadian orders have been placed.

Tin plate inquiry has come from many quarters, but consumers are slow about making forward commitments. There is a strong demand for wasters, stocks of which in the hands of makers have been considerably diminished.

The Oriental Steel Co. is quoting No. 24 gage corrugated galvanized sheets for India at £16 2s. 6d., delivered India, including duty and landing charges. Makers quote other markets at £10 and upward.

Continental, domestic and overseas steel business is improving and gold prices are rising. Belgian steel works have good orders for Belgian railways, and some mills are sold up to the end of the year.

The French steel industry is still quiet. German, Luxemburg and Saar steel outputs in September showed increases.

A Belgian steel agreement which will enable speedy reconstruction of the Continental Raw Steel Cartel is reported to be imminent. The International Wire Export Co. will meet at Dusseldorf, Germany, on Oct. 27.

The Interstate Commerce Commission, on Oct. 25, approved a loan of $338,000 by the Reconstruction Finance Corporation to the Chicago & Eastern Illinois Railway Co. The money will be used for the purchase of 1130 tons of 110-lb. relaying second-hand rails.

Cleveland Trade Experiences Larger Automobile Demand

Chevrolet Places Steel for 60,000 New Models—Ingot Output Higher—Sheet Prices Irregular

CLEVELAND, Oct. 25.—A heavier demand from the motor car industry has resulted in an increase in orders for sheets and strip steel, but business in the heavier hot-rolled steel products showed no further upward trend during the week. Warehouse business has increased rather sharply over recent months.

Ingot output in Cleveland has been increased this week three points to 26 per cent of capacity by the addition of an open-hearth furnace by the Corrigan, McKinney Steel Co.

Additional purchases of steel have been made by the automotive industry for the manufacture of new models. The Chevrolet c mpany has issued releases for steel for 60,000 cars. Other manufacturers that are showing the most activity are Chrysler and Buick. Some tonnage has also come from the Willys-Overland Co. Keen competition exists among automobile parts and accessory makers, and some business in bumpers is reported to have gone at very low prices. Cleveland forge shops are very quiet, not yet having benefited by the releases of automobile forgings. Business in steam shovels shows a gain, and Ohio builders have increased operations and are ordering more steel.

An Ohio structural fabricator has placed two electric traveling cranes, and five large cranes are pending for the Boulder Dam.

Railroads are working on rail programs for 1933, and it is expected that the rail purchases by lines with headquarters here will be about the same tonnage as for this year. While the reduction in rail prices is not expected to increase sales, it is believed that it will cause the railroads to buy steel more freely for the repair of equipment, using for that purpose the money they save on rail purchases.

Price irregularities still prevail on sheets, and the minimum quotations on cold rolled sheets are $2 a ton lower.

Pig Iron

The recently reported improvement in shipments from sources outside of the automotive field is being maintained. However, there has been only a slight gain in shipping orders from the automobile foundries. Sales have further declined and little new inquiry is pending. One producer sold 2000 tons in small lots during the week, but others booked very little business. Most foundries are covered for their early needs, but some are believed to be waiting to learn the result of election before making commitments. Prices are steady at regular quotations.

Bolts, Nuts and Rivets

Demand for bolts and nuts continue to gain slightly and October is expected to show about 20 per cent increase in business over September. Orders from the motor car industry show quite a gain. Some new contracts were placed during the week by motor car manufacturers and releases against these contracts are expected shortly. Rivets are moving slightly better than recently. Prices are well maintained.

Sheets

A better volume of business came from the motor car industry during the past week than for some time. While orders from this source were not large, several of the automobile manufacturers made purchases covering early requirements for starting production of new models. A fair number of orders are coming from miscellaneous sources, but all are for small lots. Demand from stove manufacturers shows some revival. The barrel industry remains quiet. The 2.10c. quotation on black sheets has become more common. Further weakness is in evidence on cold-rolled sheets, which now are available at 2c., Pittsburgh, for No. 10 gage and 2.50c. for No. 20 gage.

Strip Steel

Business from the automotive industry increased the past week, some tonnage coming from the Detroit territory and from Indiana plants making automobile accessories. Considerable of the steel ordered is for Chevrolet cars. Hot-rolled strip is firm at 1.45c., Pittsburgh. Cold-rolled material is unchanged at 1.90c. to 2c., Cleveland, the higher price being maintained for small orders.

Bars, Plates and Shapes

There is more activity in the construction field, but it is limited to public work. About 1000 tons of reinforcing bars will be required for the Brook Park bridge, Cleveland, for which the Ohio Highway Department will issue plans shortly. Three public jobs taking 425 tons were placed. The Ohio Highway Department will take bids Nov. 4 for seven bridges, the three larger taking over 1000 tons of structural steel. Merchant bars and shapes are in moderate demand from manufacturing consumers. Plates are quiet. Prices are firm.

Scrap

With the absence of a demand to support the market, No. 1 heavy melting steel, compressed sheet steel and machine shop turnings have declined 50c. a ton. There is no new demand in either the Cleveland or Youngstown districts. A local mill continues to take small lots of blast furnace scrap, for which dealers are paying $5. Old carwheels are firmer.

Cincinnati Pig Iron Business Declines

CINCINNATI, Oct. 25.—Having covered early in the quarter for much of their anticipated needs, district pig iron consumers have almost withdrawn from the market. Bookings the past week declined to about 500 tons, all in single car orders. Inquiry for substantial tonnage has disappeared and furnace representatives finish the week without interesting pending business.

Steel

A small demand from railroads the past week offset the slackening of galvanized sheet demand.

Scrap

While recent railroad lists brought slightly better prices, no change is noticeable in dealers' bids. Some steel and blast furnace scrap is moving on contract, but otherwise movement of old materials is negligible.

Boston Pig Iron and Scrap Sales are Meager

BOSTON, Oct. 25.—Pig iron sales continue small, with no prospect of increasing, there being no inquiries of importance in the market. Buffalo and foreign iron are more active than other brands. Certain Connecticut foundries are operating days, nights and Sundays, and some Massachusetts plants are well occupied on oil burner work, but there is little other call for castings. Shipments against pig iron contracts, however, continue to run ahead of those in September.

A local firm is buying approximately 1100 tons of No. 2 cast, No. 2 steel and stove plate for barge shipment to Philadelphia; the American Steel & Wire Co., Worcester, Mass., is still in the market for No. 1 heavy melting steel at $5.25 a ton, delivered, and for bundled skeleton at $3.25 a ton, delivered, and the Bethlehem Steel Co. is picking up an occasional car or two of material. The scrap market otherwise is decidedly quiet, with prices unchanged.

New York District Demand for Steel Has Flattened Out

Election Uncertainty Believed to Be Affecting Business Situation —No Rail Tonnage in Sight

NEW YORK, Oct. 25.—Uncertainty as to the outcome of the Presidential election is generally ascribed as the reason for the flattening out of demand for finished steel in the New York territory. Business has been dull the past week, total sales of some companies in this district having fallen below the average of previous weeks. Another factor is the holding up of all New York City work because of the municipal financial situation. However, the Borough of the Bronx took bids this week on the 205th Street viaduct, requiring 1100 tons of fabricated steel.

The reduction of $3 a ton in the price of rails has not brought out any inquiries from Eastern railroads, nor is any business of importance expected immediately. The assumption is that the reduction, which was announced by the United States Steel Corpn. following a conference between Myron C. Taylor, its chairman, and several railroad presidents, was to assist the railroads in figuring their 1933 budgets. Probably not much rail tonnage will be placed until the end of the year.

Aside from the reduction in the rail price, the prices for some grades of sheets have weakened. No. 24 hot-rolled annealed is available in carload lots at 2.10c. a lb., Pittsburgh, the September price, and light and heavy cold-rolled sheets and furniture sheets are lower. Prices of other steel products seem to be holding.

Pig Iron

Demand during the past week dwindled to the lowest point of the month. Shipments against standing contracts are freer, however, but sellers are not very sanguine that the improved deliveries will be sustained, as most of the increase is being absorbed by foundries which are enjoying seasonal business. Bookings of 2000 tons during the week approximated those in the preceding week and 2500 tons two weeks ago. The insignificant character of current transactions affords little indication of a change in price trend. Though foreign iron still hovers over the market as a keen competitor, it has been a lagging participant in the small-lot trading of the past few weeks. A cargo of Royal Dutch iron, most of which has been sold, arrived last week at Bridgeport, Conn. Realization of tentative plans to light an eastern Pennsylvania stack next month depends largely, according to reports, upon the swing in business sentiment after the election.

Scrap

Loading of No. 1 heavy melting steel for shipment to Japan represents the only important activity in this market. All other grades are very quiet. Prices are unchanged.

Corporation Preferred Dividend Continued Despite Heavy Loss

Operating Deficit for Third Quarter, at $4,474,719, Displaces Second Quarter's as Worst in History

DIRECTORS of the United States Steel Corpn., on Tuesday, declared the regular quarterly dividend of 1¾ per cent on the preferred stock, in the face of even poorer returns than in the second quarter, which up to that time had been the worst in the history of the company.

The deficit for the third quarter resulting from operations, after deducting all expenses, including ordinary repairs and maintenance of plants and taxes, was $4,474,719, compared with $3,362,736 for the second quarter and $1,136,607 for the first quarter. Charges for depletion, depreciation and obsolescence accounted for $9,356,848 and bond interest was $1,323,506, making a total deficit from operations of $15,155,072, compared with $14,565,013 in the second quarter. A special charge for overhead expenses of the Lake Superior iron ore properties and Great Lakes transportation service totaled $5,716,637. Preferred dividends called for an outlay of $6,304,919. The total quarterly deficit, provided from surplus, was $27,176,268.

The Steel Corporation's cash balance at the end of the third quarter stood at $82,000,000 and the market value of its holdings of United States Government securities was $48,773,000. On Jan. 1, 1932, its cash was $84,509,000 and its Government securities totaled $72,958,000.

The corporation's ingot production and shipments for recent months were as follows:

	—Per Cent of Capacity— Production Ingots	Shipments Finished Products
July	11.8	15.7
August	12.1	15.5
September	16.2	16.4
October (to the 15th)	16.6	19.1

It was explained that production has been running below shipments because total inventories have been reduced since Jan. 1 by approximately $36,000,000.

Other Financial Reports

Jones & Laughlin Steel Corpn., in the quarter ended Sept. 30, had a net loss after all charges, including reserves for depreciation and depletion and bond interest, of $1,682,919. The loss for the nine months amounted to $6,912,859. After preferred dividend payments, the total charged to surplus in this period was $8,247,845.

Republic Steel Corpn. reported a net loss from operations during the third quarter of $3,419,353, after deducting charges for depreciation, renewals, exhaustion of minerals and interest. This compares with a loss in the second quarter of $2,669,826. During the third quarter the company increased its cash balance $355,463, and reduced its notes and accounts payable $567,445 and its funded indebtedness $802,400.

Detroit Scrap Market Dull; Prices Steady

DETROIT, Oct. 25.—The scrap market is dull, but prices remain fairly steady and unchanged with the exception of a further advance of 25c. a ton in borings and short turnings and a decline of 50c. in automotive cast. The local blast furnace interest is still taking in material contracted for several weeks ago.

Pipe Lines

Marion Oil Corpn., First National Bank Building, Oklahoma City, Okla., has plans for a 6-in. steel pipe line in oilfield district near city, totaling over 15,000 ft. H. W. King, address noted, is company engineer.

United States Engineer Office, P. O. Box 45, Jacksonville, Fla., asks bids until Nov. 7 for 15 lengths, each 40 ft., 21-in. o.d. riveted steel pontoon discharge pipe (Circular 159).

Interstate Natural Gas Co., Ferriday, La., has work under way on a steel pipe line loop at Clayton, La., and plans additional installations soon, laying pipe above ground on concrete supports instead of underground.

Pure Oil Co., Chicago, will install a 12-mile steel pipe line from oilfield at Gueydan, La., to terminal at Lake Arthur.

Fabricated Structural Steel

Lettings Considerably Higher—New Projects Light

TOTAL bookings the past week, at 16,000 tons, were double those of the previous week and were the largest for any corresponding period since the first week in September. A post office in Jacksonville, Fla., accounts for 2750 tons, locks at Canton, Mo., 1800 tons and a bridge over the Missouri River at Elbowoods, N. D., 1700 tons. New projects of 5100 tons are the smallest since May, and include no sizable tonnages. Three counties in the State of Ohio will require 1050 tons for bridges. Awards follow:

NORTH ATLANTIC STATES

Springfield, Mass., 235 tons, Armory Street bridge, to an unnamed fabricator.

Hartford, Conn., 625 tons, Wadsworth Athenaeum, to Lehigh Structural Steel Co.

Endicott, N. Y., 105 tons, school, to Lackawanna Steel Construction Corpn.

New York, 140 tons, Silver's Baths at Coney Island, to Simon Holland & Son, Inc.

Shamokin, Pa., 265 tons, highway bridge, to McClintic-Marshall Corpn.

State of Pennsylvania, 180 tons, highway bridge in Lebanon County, to Bauman Iron Works.

State of Pennsylvania, 330 tons, highway bridge in Lawrence County, to Jones & Laughlin Steel Corpn.

Philadelphia, 238 tons, Keystone Lubricating Co., to Morris-Wheeler Co.

Washington, 130 tons, community house, to Lehigh Structural Steel Co.

SOUTH AND SOUTHWEST

Virginian & Western Railway, 820 tons, bridges, to Virginia Bridge & Iron Co.

Jacksonville, Fla., 2750 tons, post office, to Wheeling Structural Steel Co.

Bogalusa, La., 220 tons, boiler house, to Ingalls Iron Works.

Sayre, Okla., 375 tons, highway bridge, to McClintic-Marshall Corpn.

State of Oklahoma, 750 tons, bridge, to J. B. Klein Iron & Foundry Co.

Roger Mills County, Okla., 650 tons, highway bridge, to Missouri Valley Bridge & Iron Co.

CENTRAL STATES

Cleveland, 100 tons, Fowler Junior High School, to Ingalls Iron Works Co.

Niles, Ohio, 425 tons, highway bridge, to American Bridge Co.

Chicago, 700 tons, Chrysler World's Fair building, to Duffin Iron Co.

Chicago, 275 tons, repairs to Division Street bridge, to Duffin Iron Co.

Chicago, 375 tons, Sears, Roebuck building for World's Fair, to Union Foundry Co.

Elbowoods, N. D., 1700 tons, bridge over Missouri River, to American Bridge Co.

Canton, Mo., 1800 tons, locks, to R. C. Mahon Co.

State of Nebraska, 885 tons, bridges, to St. Joseph Structural Steel Co.

WESTERN STATES

Bakersfield, Cal., 1500 tons, Kern River highway bridge, to McClintic-Marshall Corpn.

Mt. Rainier Park, Wash., 156 tons, bridge for Bureau of Public Roads, to Poole & McGonigle.

Universal City, Cal., 250 tons, stage for Universal Pictures Corpn., to Consolidated Steel Corpn.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Exeter, N. H., 200 tons, two school units.

New York, 1100 tons, 205th Street viaduct; bids closed Oct. 26, President, Borough of Bronx.

Long Island City, N. Y., 400 tons, repair and service station.

Philadelphia, 8000 tons, custom house; bids close Nov. 16.

Western Maryland Railroad, 300 tons, viaduct repairs at Baltimore.

THE SOUTH

Beaumont, Tex., 400 tons, post office.

CENTRAL STATES

State of Ohio, 1050 tons, highway bridges; 500 tons, Trumbull County; 350 tons, Lawrence County; 200 tons, Preble County; bids Nov. 4.

WESTERN STATES

Colton, Utah, 318 tons, highway bridge, bids close Nov. 4.

State of Utah, 207 tons, bridges at Moark and Saltair; bids close Nov. 2.

Venice, Cal., 100 tons, Culver Boulevard crossing; bids close Nov. 9.

San Diego County, Cal., 213 tons, Alpine highway bridge; bids close Nov. 9.

Alameda, Cal., 250 tons, structures at Government island base; bids close Nov. 2.

San Francisco, 550 tons, additional tonnage for city psychopathic ward.

FABRICATED PLATE

AWARDS

Morrisville, Pa., 100 tons, standpipe, to Pittsburgh-Des Moines Steel Co.

Pittsburgh, 200 tons, barge for Sun Oil Co., to American Bridge Co.

Roseburg, Ore., 100 tons, welded pipe line for California Oregon Power Co., to Beall Tank & Pipe Co.

NEW PROJECTS

New York, 500 tons, storage tanks for David C. Reed Co.

Birmingham Pig Iron Production Gaining

BIRMINGHAM, Oct. 25.—Pig iron sales and shipments for October may show a slight improvement over those of September. Production will also be larger, two furnaces having been blown in this month, as previously reported. The number of active stacks is five, the same as last week. Four are on foundry iron and one on basic. Stove plants are now providing the most active demand. Pipe plant demand is still irregular and small. One large pipe plant will probably be idle the first 10 days of November. As R. F. C. loans become more numerous there is an indication of better pipe business within the next two months. Pig iron prices of $11 for the Southern market and $10 for the North is unchanged.

Steel

Demand for the past few weeks has been holding at a fair rate, but is not equal to that of September. Buying last month was stimulated by the increase in farm commodity prices. Present tonnage is coming largely from the jobbing trade and highway work. Structural steel requirements are light. The Tennessee company last week reduced its quotation on standard rails from $43 to $40 a ton. Other prices are holding. Six open-hearths were in operation last week and the same schedule probably will be followed this week.

St. Louis Pig Iron Sales Small; Shipments Steady

ST. LOUIS, Oct. 25.—Shipping instructions against pig iron contracts are being well maintained, but new business continues light. Manufacturers of stoves and other heating appliances, who have been enjoying seasonal activity, continue to be the most important factors in the trade. Prices are unchanged.

Steel

Open-hearth operations in the St. Louis industrial district are about 15 per cent of capacity.

Business with the Granite City Steel Co. for the first half of October is reported as having been equal to that of the same period in September, which was that company's best month of 1932.

Maxson Construction Co., Dayton, Ohio, is low bidder on the Canton, Mo., dam, requiring 800 tons of structural steel, 250 tons of reinforcing bars, 500 tons of steel castings and 1600 square feet of steel sheet piling. State of Missouri will open bids Oct. 28 for highway bridges requiring 250 tons of structural steel.

Scrap

The sale of a small tonnage of heavy melting steel to a district mill constituted the only transaction of note during the week. Prices are nominally unchanged. Railroad lists: Missouri-Kansas-Texas, 2130 tons; Mobile & Ohio, 1200 tons, and Missouri Pacific, 29 carloads.

Cast Iron Pipe

Niskayuna, N. Y., opens bids this week on approximately 1000 tons of 6- to 10-in. for water distribution system.

Garden City, N. Y., awarded 230 tons of 16- and 18-in. to United States Pipe & Foundry Co.

Beaumont, Tex., plans early call for bids for about 4375 ft. of 12-in. and 1100 ft. of 8-in. for water system.

St. Louis has opened bids on 400 tons of 8- and 12-in.; American Cast Iron Pipe Co. is low bidder.

Ogden, Utah, will specify shortly on 8000 tons instead of 800 tons, as reported last week, included in water system improvements covered by a loan from Reconstruction Finance Corpn.

Suburban Water Co., new operator of former municipal plants in Santa Clara Valley, Cal., has awarded 1200 tons of 4-, 6- and 8-in. Class B to C. G. Claussen Co.

United States Pipe & Foundry Co. was low bidder on 5000 tons in bidding on a total of 7500 tons at Los Angeles; R. D. Wood Co., Pacific States Cast Iron Pipe Co. and American Cast Iron Pipe Co. were low bidders on lots of the remaining tonnage.

Pacific States Cast Iron Pipe Co. was awarded 200 tons of 2-in. at Los Angeles.

Seattle awarded 102 tons, to United States Pipe & Foundry Co.

Copper and Tin Seek Lower Levels in Inactive Non-Ferrous Market

NEW YORK, Oct. 25.—After resisting downward tendencies during a protracted period of lethargic demand, the Connecticut price for electrolytic copper fell yesterday to 5.50c. for spot and 5.75c. for delivery into first quarter. Price weakness became more pronounced today when offerings at 5.50c. were posted freely for delivery through first quarter. The 5.50c. price emanated solely from custom smelters who are apparently endeavoring to arouse buying interest in an effort to liquidate growing stocks that resulted from recent increases in intake. Thus far, however, the lower price has failed to stir buyers from their apathy. Moreover, the move to effect lower price levels is considered in some quarters as particularly ill-timed, as buying in most commodity markets has been retarded by political uncertainties and general unsettlement in business. Primary producers, who are maintaining a price of 6.25c., Connecticut, are practically out of the market. Weakness in foreign prices is also evident, with sales having been made at 5.40c. to 5.45c., c.i.f. usual European ports. The export price during the week ranged from 5.40c. to 5.65c. Lake copper, in sympathy with the electrolytic price, is lower at 5.75c., delivered.

Tin

A sharp drop yesterday in sterling exchange brought the New York price of tin down to 23.45c., the lowest level that has obtained since Aug. 24. The market today recovered slightly to 23.50c. After a week of rather dull trading, a moderate spurt of buying accompanied the drop in price yesterday. Consumers are chiefly interested in delivery during the remainder of the year, although a fair amount of covering through first quarter has been transacted. The London market was fairly steady throughout the week, with today's quotations £153 10s. a ton for spot standard, £153 15s. for future standard and £159 5s. for spot Straits. Today's Singapore price of £157 17s. 6d. reflected a slight gain over that market a week ago. Warehouse stocks of tin in the United Kingdom decreased 43 tons last week and now stand at 31,245 tons.

Lead

Activity in this market during the week was devoid of significant developments. Moderate buying from day to day has lent a fairly steady tone to prices, which are maintained at 3c., New York, and 2.90c., St. Louis. November covering constitutes the bulk of current transactions, though spot orders continue to dribble in from hand-to-mouth buyers. Corroders have been prominent in recent buying, while cable manufacturers have been virtually non-existent as an outlet for lead recently.

Zinc

The dullness that has characterized trading during the past several weeks is apparently lingering. Very little business, with the exception of routine buying of inconsequential lots, has recently come to the surface. The sluggishness of demand has apparently not seriously affected the price situation, though the market is slightly lower than a week ago at 3c., East St. Louis, or 3.37c., New York. In some cases, however, bids at less than 3.05c., East St. Louis, are being turned down, so that a spread of 3c. to 3.05c. more accurately indexes the market.

The Week's Prices. Cents Per Pound for Early Delivery

	Oct. 19	Oct. 20	Oct. 21	Oct. 22	Oct. 24	Oct. 25
Lake copper, New York	6.25	6.25	6.00	6.00	5.75	5.75
Electrolytic copper, N. Y.*	6.00	6.00	5.75	5.75	5.25	5.25
Straits tin, spot, N. Y.	24.10	23.95	23.87½	....	23.45	23.50
Zinc, East St. Louis	3.05	3.00	3.00	3.00	3.00	3.00
Zinc, New York	3.42	3.37	3.37	3.37	3.37	3.37
Lead, St. Louis	2.90	2.90	2.90	2.90	2.90	2.90
Lead, New York	3.00	3.00	3.00	3.00	3.00	3.00

*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.
Nickel, electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 5.60c. a lb., New York.
Brass ingots, 85-5-5-5, 6.25c. a lb., New York and Philadelphia.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	25.50c. to 26.50c.
Tin, bar	27.50c. to 29.50c.
Copper, Lake	7.75c. to 8.75c.
Copper, electrolytic	7.50c. to 8.50c.
Copper, casting	7.25c. to 8.25c.
*Copper sheets, hot-rolled	15.37½c.
*High brass sheets	12.50c.
*Seamless brass tubes	15.25c.
*Seamless copper tubes	14.37½c.
*Brass rods	10.25c.
Zinc, slabs	4.37½c. to 4.87½c.
Zinc sheets (No. 9), casks	9.25c. to 9.50c.
Lead, American pig	3.75c. to 4.25c.
Lead, bar	5.25c. to 6.25c.
Lead sheets	6.75c.
Antimony, Asiatic	8.00c. to 9.00c.
Alum., virgin, 99 per cent plus	23.30c.
Alum. No. 1 for remelting, 98 to 99 per cent.	16.00c.
Solder, ½ and ½	15.50c. to 16.50c.
Babbitt metal, commercial grade	21.00c. to 32.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	27.50c.
Tin, bar	29.50c.
Copper, Lake	7.25c.
Copper, electrolytic	7.25c.
Copper, casting	6.875c.
Zinc, slab	4.25c. to 4.50c.
Lead, American pig	3.75c. to 4.00c.
Lead, bar	7.25c.
Antimony, Asiatic	8.50c.
Babbitt metal, medium grade	16.50c.
Babbitt metal, high grade	31.25c.
Solder, ½ and ½	17.25c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	4.25c.	5.00c.
Copper, hvy. and wire	4.00c.	4.75c.
Copper, light and bottoms	3.00c.	3.625c.
Brass, heavy	2.00c.	2.75c.
Brass, light	1.50c.	2.00c.
Hvy. machine composition	3.00c.	3.625c.
No. 1 yel. brass turnings	2.25c.	2.625c.
No. 1 red brass or compos. turnings	2.50c.	3.25c.
Lead, heavy	2.125c.	2.50c.
Zinc	1.25c.	1.625c.
Cast aluminum	3.00c.	4.50c.
Sheet aluminum	7.00c.	8.75c.

Columbia Steel Plants Being Improved

SAN FRANCISCO, Oct. 24.—A half million dollars is being expended by the Columbia Steel Co. in improvement of plants and expansion activities on the Pacific Coast, according to announcement of William A. Ross, vice-president in charge of sales of the company and chairman of the Twelfth Federal Reserve District reconstruction committee.

These improvements by the Far Western subsidiary of the United States Steel Corpn. are applied to existing plants at Pittsburg and Torrance, Cal., consisting principally in rebuilding and rearrangement of present equipment and installation of new machinery for the manufacture of a larger range of rolled and drawn steel products, not previously made on the Pacific Coast. The installation of a normalizing furnace in the present sheet mill will permit the manufacture of the highest grade steel sheets, including automobile sheets and finished sheets for stove and furniture use.

Indicative of the current market price for reinforcing bars in Southern California was the award last week of 300 tons for the county, delivered to Azusa Yard, at $46.37 a ton.

Awards of approximately 3000 tons are reported for the week, with new inquiries for approximately the same amount and a decrease in new jobs.

Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

Base per Lb.

F.o.b. Pittsburgh mill .....1.60c.
F.o.b. Chicago .....1.70c.
Del'd Philadelphia .....1.91c.
Del'd New York .....1.95c.
Del'd Detroit .....1.80c.
F.o.b. Cleveland .....1.65c.
F.o.b. Lackawanna .....1.70c.
F.o.b. Birmingham .....1.75c.
C.i.f. Pacific ports .....2.10c.

Billet Steel Reinforcing
(as quoted by distributers)

F.o.b. P'gh mills, 40, 50, 60-ft....1.60c.
F.o.b. Birmingham, mill lengths....1.75c.
F.o.b. Cleveland .....1.60c. to 1.75c.

Rail Steel

F.o.b. mills, east of Chicago dist. .....1.35c. to 1.45c.
F.o.b. Chicago Heights mills.....1.50c.

Iron

Common iron, f.o.b. Chicago.....1.60c.
Refined iron, f.o.b. P'gh mills.....2.75c.
Common iron, del'd Philadelphia...2.11c.
Common iron, del'd New York.....2.15c.

Tank Plates

Base per Lb.

F.o.b. Pittsburgh mill .....1.60c.
F.o.b. Chicago .....1.70c.
F.o.b. Birmingham .....1.75c.
Del'd Cleveland .....1.8935c.
Del'd Philadelphia .....1.7935c.
F.o.b. Coatesville .....1.70c.
F.o.b. Sparrows Point.....1.70c.
Del'd New York .....1.898c.
C.i.f. Pacific ports.....2.00c.
Wrought iron plates, f.o.b. P'gh....3.00c.

Structural Shapes

Base per Lb.

F.o.b. Pittsburgh mill .....1.60c.
F.o.b. Chicago .....1.70c.
F.o.b. Birmingham .....1.75c.
F.o.b. Lackawanna .....1.70c.
F.o.b. Bethlehem .....1.70c.
Del'd Cleveland .....1.8035c.
Del'd Philadelphia .....1.7495c.
Del'd New York .....1.86775c.
C.i.f. Pacific ports (standard).....2.10c.
C.i.f. Pacific ports (wide flange)...2.20c.

Steel Sheet Piling

Base per Lb.

F.o.b. Pittsburgh .....1.90c.
F.o.b. Chicago mill .....2.05c.
F.o.b. Buffalo .....2.00c.

Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quantity Bar Base, 2.45c. to 2.65c. per Lb.

S.A.E. Series Numbers	Alloy Differential per 100 Lb.
2000 (1½% Nickel)	$0.25
2100 (1½% Nickel)	0.55
2300 (3½% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.16 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.50 to 2.00 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
6100 Chromium Spring Steel	0.20
6100 Chromium Vanadium Bar	1.20
4100 Chromium Vanadium Spring Steel	0.95
9250 Silicon Manganese Spring Steel (flats)	0.25
Rounds and Squares	0.50
Chromium Nickel Vanadium	1.50
Carbon Vanadium	0.95

Above prices are for hot-rolled steel bars, forging quality. The differential for cold-drawn bars is ¾c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a section area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2½ in. thick, regardless of sectional area, take the bar price.

Cold Finished Bars*

Base per Lb.

Bars, f.o.b. Pittsburgh mill.....1.70c.
Bars, f.o.b. Chicago.....1.75c.
Bars, Cleveland .....1.75c.
Bars, Buffalo .....1.75c.
Bars, Detroit .....1.90c.
Bars, eastern Michigan.....1.95c.
Shafting, ground, f.o.b. mill .....
1¼ in. 3.00c.
1-3/16 to 1½ in. 2.50c.
1-9/16 to 1⅞ in. 2.35c.
1-15/16 to 2⅜ in. 2.20c.
2-15/16 to 6 in. 2.05c.

*In quantities of 10,000 to 19,999 lb.

SHEETS, STRIP, TIN PLATE, TERNE PLATE

Sheets

Hot-Rolled

Base per Lb.

No. 10 f.o.b. Pittsburgh .....1.55c.
No. 10 f.o.b. Chicago mill.....1.65c.
No. 10 del'd Philadelphia .....1.86c.
No. 10 f.o.b. Birmingham .....1.70c.
No. 10, c.i.f. Pacific Coast ports..2.17½c.

Hot-rolled and Annealed

No. 10, Pittsburgh .....1.70c.
No. 10, Chicago mills .....1.80c.
No. 10, Birmingham .....1.85c.
No. 10, Pacific Coast ports.....2.32½c.
No. 10, wrought iron, Pittsburgh...3.60c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh..2.10c. to 2.20c.
No. 24, f.o.b. Ch'go mills..2.20c. to 2.30c.
No. 24, del'd Philadelphia..2.41c. to 2.51c.
No. 24, f.o.b. Birmingham .....2.35c.
No. 24, c.i.f. Pacific Coast ports....2.85c.
No. 24 wrought iron, Pittsburgh....4.20c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh .....2.00c to 2.10c.
No. 10 gage, f.o.b. Chicago mills .....2.20c.
No. 10 gage, del'd Philadelphia .....2.41c. to 2.51c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh .....2.50c. to 2.60c.
No. 20 gage, f.o.b. Chicago Mills .....2.70c.
No. 20 gage, del'd Philadelphia .....2.81c. to 2.91c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....2.65c.

Steel Furniture Sheets

No. 10, f.o.b. Pittsburgh...2.40c. to 2.50c.
No. 20, f.o.b. Pittsburgh...2.90c. to 3.00c.

(Prices on furniture stock include stretcher leveling but not reaquaring.)

Galvanized Sheets

No. 24, f.o.b. Pittsburgh .....2.85c.
No. 24, f.o.b. Chicago mills.....2.95c.
No. 24, del'd Philadelphia..3.16c.
No. 24, f.o.b. Birmingham.....3.00c.
No. 24, c.i.f. Pacific Coast ports....3.50c.
No. 24, wrought iron, Pittsburgh....4.95c.

Long Ternes

No. 24, unassorted, 8-lb. coating, f.o.b. P'gh .....2.80c.

Vitreous Enameling Stock

No. 10, f.o.b. Pittsburgh.....2.60c.
No. 20, f.o.b. Pittsburgh.....3.10c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh...2.30c. to 2.40c.
No. 28, Chicago mill.....2.50c.

Tin Plate

Base per Box

Standard cokes, f.o.b. P'gh district mill $4.75
Standard cokes, f.o.b. Gary.....4.85

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating I.C. $9.50
15-lb. coating I.C. 12.00
20-lb. coating I.C. 13.00
25-lb. coating I.C. 14.10
30-lb. coating I.C. 14.90
40-lb. coating I.C. 16.70

Hot-Rolled Hoops, Bands, Strips and Flats under ¼ in.

Base per Lb.

All widths up to 24 in., Pittsburgh.....1.45c.
All widths up to 24 in., Chicago.....1.55c.
Cooperage stock, P'gh.....1.55c. to 1.60c.
Cooperage stock, chicago...1.65c. to 1.70c.

Cold-Rolled Strips

F.o.b. Pittsburgh .....1.90c. to 2.00c.
F.o.b. Cleveland .....1.90c. to 2.00c.
Del'd Chicago .....2.20c. to 2.30c.
F.o.b. Worcester .....2.20c.
Fender stock No. 20 gage, Pittsburgh or Cleveland.....2.70c. to 2.75c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)
(After Dec. 31, extras of 10c. a 100 lb. on mixed and joint carloads, 25c. on pool carloads and 40c. on less than carloads will be applied on all merchant wire products.)

To Manufacturing Trade

Bright wire .....2.20c.
Spring wire .....3.20c.

To Jobbing Trade

Base per Keg

Standard wire nails.....$1.95
Smooth coated nails 1.95
Galvanized nails 2.95

Base per Lb.

Smooth annealed wire.....2.35c.
Smooth galvanized wire.....2.80c.
Polished staples .....2.50c.
Galvanized staples .....2.75c.
Barbed wire, galvanized.....2.60c.
Woven wire fence No. 9 gage, per net ton $55.00
Woven wire fence, No. 12½ gage and lighter, per net ton.....60.00

Chicago and Anderson, Ind., mill prices are $1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill $2 a ton over Pittsburgh, and Birmingham mill $3 a ton over Pittsburgh.

STEEL PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Steel Black	Steel Galv.	Iron Inches	Iron Black	Iron Galv.
⅛	51½	28½	⅛	+95	+142½
¼ to ⅜	57	34	¼ & ⅜	+5	+29½
½	62	49½	½	28	10½
¾	65½	55	¾	33	16½
1 to 3	67½	57	1&1¼	36	20½
			1½	40	23
			2	38	21

Lap Weld

2	61	50½	2	26	12½
2½ to 6	64½	54	2½ to 3½	33	18½
7 and 8	62	51	4 to 6	35	22
9 and 10	60	49	7 and 8	34	21½
11 and 12	59	48	9 to 12	31	16½

Butt Weld, extra strong, plain ends

⅛	48	33	⅛	+17	+49½
¼ to ⅜	53½	38½	¼ & ⅜	+7	+41
½	59	49½	½	28	12½
¾	63½	54	¾	33	17½
1 to 1½	65½	56	1 to 2	39	23
2 to 3	66½	57			

Lap Weld, extra strong, plain ends

2	59	49½	2	34	18½
2½ to 4	62½	53	2½ to 4	39	25
4½ to 6	62	52½	4½ to 6	38	24
7 to 8	58	47	7 & 8	36	22
9 and 10	51½	40½	9 to 12	26	13½
11 and 12	50½	39½			

Discounts on steel and wrought iron pipe are net and not subject to any points or preferentials.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel		Charcoal Iron	
2 in. and 2¼ in.	38	1½ in.	1
2½ in.—2¾ in.	46	1¾ in.	8
3 in.	52	2 in.—2¼ in.	13
3¼ in.—3¾ in.	54	2½ in.—2¾ in.	16
4 in.	57	3 in.	17
4½ in. to 6 in.	46	3¼ in. to 3½ in.	18
		4 in.	20
		4½ in.	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

Cold-Drawn

1 in.	61	3 in.	46
1¼ to 1½ in.	53	3¼ to 3½ in.	48
1¾ in.	37	4 in.	51
2 to 2¼ in.	32	4½, 5 and 6 in.	40
2½ to 2¾ in.	40		

Hot Rolled

2 and 2¼ in.	38	3¼ to 3½ in.	54
2½ and 2¾ in.	46	4 in.	57
3 in.	52	4½, 5 and 6 in.	46

Beyond the abve base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. in lighter than standard gages takes the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List

Carbon, 0.10% to 0.30% base (carloads) 55
Carbon, 0.30% to 40% base..... 50

Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

RAILS AND TRACK SUPPLIES

Rails

Per Gross Ton

Standard, f.o.b. mill $40.00
Light (from billets), f.o.b. mill.... 32.00
Light (from rail steel, f.o.b. mill) $28.00

Track Equipment

Base per 100 Lb.

Spikes, 9/16-in. and large.....$2.40
Spikes, ½-in. and large..... 2.40
Spikes, boat and barge..... 2.60
Tie plate, steel..... 1.85
Angle bars 2.75
Track bolts, to steam railroads..... 3.50
Track bolts, to jobbers, all sizes, per 100 count.....73 per cent off list

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

†Machine bolts 75
†Carriage bolts 75
Lag bolts 75
Plow bolts, Nos. 1, 2, 3 and 7 heads.. 75
Hot-pressed nuts, blank or tapped, square 75
Hot-pressed nuts, blank or tapped, hexagons 75
C.p.c. and t. square or hex nuts, blank or tapped 75
Washers*...7.00c. to 6.75c. per lb. off list

F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled thread up to and including ⅞ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

Per Cent Off List

Semi-finished hexagon nuts 75
Semi-finished hexagon castellated nuts, S.A.E. 75
Stove bolts in packages, P'gh, 77½, 25 and 10
Stove bolts in packages, Ch'go, 77½, 25 and 10
Stove bolts in pkgs., Cleveland, 77½, 25 and 10
Stove bolts in bulk, P'gh..... 80
Stove bolts in bulk, Chicago..... 80
Stove bolts in bulk, Cleveland..... 80
Tire bolts.....60 and 10

Discount of 75 per cent off on bolts and nuts applies on carload business with jobbers and large consumers.

Large Rivets

(½-in. and larger)

Base per Lb.

F.o.b. Pittsburgh or Cleveland.....$2.25
F.o.b. Chicago 2.35

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh .....70, 10 and 5
F.o.b. Cleveland .....70, 10 and 5
F.o.b. Chicago .....70, 10 and 5

Cap and Set Screws

Discounts to Jobbers

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller .....80 and 25
Milled standard set screws, case hardened, 1 in. dia. and smaller...75 and 10
Milled headless set screws, cut thread, ⅜ in. and smaller.....75 and 10
Upset hex. head cap screws, U.S.S.S. or S.A.E. thread, 1 in. dia. and smaller .....80, 25 and 10
Upset set screws, sq. head, 1 in. dia. and smaller .....75, 10 and 10
Upset set screws, 1⅛ in. and larger, 75 and 10
Milled studs 70

SEMI-FINISHED STEEL

Billets and Blooms

Per Gross Ton

Rerolling, 4-in. and under 10-in., Pittsburgh $26.00
Rerolling, 4-in. and under 10-in., Youngstown 26.00
Rerolling, 4-in. and under 10-in., Cleveland 26.00
Rerolling, 4-in. and under 10-in., Chicago 26.00
Forging quality, Pittsburgh..... 31.00
Forging quality, Youngstown..... 31.00

Sheet Bars

(Open-Hearth or Bessemer)

Per Gross Ton

Pittsburgh $26.00
Youngstown 26.00
Cleveland 26.00

Slabs

(8 in. x 2 in. and under 10 in. x 10 in.)

Per Gross Ton

Pittsburgh $26.00
Youngstown 26.00
Cleveland 26.00

(Turn to next page)

(F.o.b. Pittsburgh or Youngstown)

	Per Lb.
Grooved	1.60c
Universal	1.60c.
Sheared	1.60c.

Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	$37.00
Cleveland	37.00
Chicago	38.00

COKE, COAL AND FUEL OIL

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville Prompt	$1.75 to $2.00
Furnace, f.o.b. Connellsville prompt	2.75 to 4.25
Foundry, by-product, Chicago ovens, for delivery outside switching districts	7.00
Foundry, by-product, deliv-ered in Chicago switch-ing district	7.75
Foundry, by-product, New England, delivered	10.00
Foundry, by-product, Newark or Jersey City, del'd	8.20 to 8.81
Foundry, by-product, Phila.	9.00
Foundry, by-product, Cleve-land, delivered	7.82
Foundry, Birmingham	5.00
Foundry, by-products, St. Louis, f.o.b., ovens	8.00
Foundry, by-products, del'd St. Louis	9.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.20 to $1.30
Mine run coking, coal, f.o.b. W. Pa.	1.30 to 1.40
Gas coal, ¾-in., f.o.b. Pa. mines	1.30 to 1.40
Mine run gas coal, f.o.b. Pa. mines	1.30 to 1.40
Steam slack, f.o.b. W. Pa. mines	0.50 to 0.65
Gas slack, f.o.b. W. Pa. mines	0.50 to 0.65

Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.	
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
Per Gal. f.o.b. Baltimore	
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
Per Gal. del'd Chicago	
No. 3 industrial fuel oil	2.80c. to 2.90c.
No. 5 industrial fuel oil	2.45c. to 2.50c.
Per Gal. f.o.b. Cleveland	
No. 3 distillate	5.00c.
No. 4 industrial	4.50c.

REFRACTORIES

Fire Clay Brick

	Per 1000 f.o.b. Works: High-heat Duty Brick	Intermediate Duty Brick
Penn.	$35.00	$25.00 to $30.00
Maryland	35.00	25.00 to 30.00
New Jer.	$44.00 to 57.00	
Ohio	35.00	25.00 to 30.00
Kentucky	35.00	25.00 to 30.00
Missouri	35.00	30.00
Illinois	35.00	25.00 to 30.00
Ground fire clay, per ton	6.50	

Chrome Brick

	Per Net Ton
Standard size	$42.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$38.00
Chicago	47.00
Birmingham	50.00
Silica clay, per ton	8.00

Magnesite Brick

	Per Net Ton
Standard sizes, burned, f.o.b. Balti-more and Chester, Pa.	$61.50
Unburned, f.o.b. Baltimore	52.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	38.50
Domestic, f.o.b. Chewelah, Wash.	20.90

CAST IRON PIPE

	Per Net Ton
6-in. and larger, del'd Chicago	$38.40 to $41.40
4-in., del'd Chicago	41.40 to 44.40
6-in., and larger, del'd New York	33.30
4-in., del'd New York	36.30
6-in., and larger, Birm'ham	$32.00 to 33.00
4-in., Birmingham	35.00 to 36.00

Class "A" and gas pipe, $3 extra.

Pig Iron, Ores, Ferroalloys

VALLEY

Per gross ton, f.o.b. Valley furnace:

Basic	$13.50
Bessemer	15.00
Gray forge	14.50
No. 2 foundry	14.50
No. 3 foundry	14.00
Malleable	$14.50 to 15.00
Low phos., copper free	23.00 to 25.00

Freight rate to Pittsburgh or Cleveland district, $1.89.

PITTSBURGH

Per gross ton, f.o.b. Pittsburgh district furnace:

Basic	$14.00
No. 2 foundry	15.00
No. 3 foundry	14.50
Malleable	15.00
Bessemer	15.00

Freight rates to points in Pittsburgh district range from 69c. to $1.26.

CHICAGO

Per gross ton at Chicago furnace:

N'th'n No. 2 fdy.	$15.50
N'th'n No. 1 fdy.	16.00
Malleable, not over 2.25 sil.	15.50
High phosphorus	15.50
Lake Super. charcoal, sil. 1.50, by rail	23.17
Southern No. 2 fdy.	16.14
Low phos., sil. 1 to 2. Copper free.	25.00
Silvery, sil. 8 per cent.	23.67
Bess. ferrosil'n, 15 per cent.	28.92

Prices are delivered consumers' yards except on Northern foundry, high phos-phorus and malleable, which are f.o.b. local furnaces, not including a switching charge.

ST. LOUIS

Per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	$17.50
Malleable, f.o.b. Granite City	17.50
Northern No. 2 fdy., del'd St. Louis	$18.30 to 18.80
Southern No. 2 fdy. del'd.	14.56
Northern malleable, del'd.	18.30 to 18.80
Northern basic, deliv'd.	18.30 to 18.80

Freight rates 83c. (average) Granite City to St. Louis; $2.30 from Chicago; $4.56 from Birmingham.

NEW YORK

Per gross ton, delivered New York district:

* Buffalo, No. 2, del'd east N. J.	$17.41 to $17.66
East Pa. No. 2 fdy.	15.02 to 15.52
East Pa. No. 2X fdy.	15.52 to 16.02

Freight rates: $1.52 to $2.63 from eastern Pennsylvania.

* Prices delivered to New Jersey cities having rate of $3.41 a ton from Buffalo.

BUFFALO

Per gross ton, f.o.b. furnace:

No. 2 fdy.	$16.00
No. 2X fdy.	16.50
No. 1 fdy.	17.50
Malleable, sil. up to 2.25	16.50
Basic	15.50
Lake Superior charcoal, del'd	23.41

NEW ENGLAND

Per gross ton delivered to most New England points:

*Buffalo, sil. 1.75 to 2.25	$19.05
*Buffalo, sil. 2.25 to 2.75	19.05
†Buffalo, sil. 1.75 to 2.25	17.41
†Buffalo, sil. 2.25 to 2.75	17.41
†Ala., sil. 1.75 to 2.25	15.64
†Ala., sil. 2.25 to 2.75	16.14

Freight rates: $5.05 all rail from Buf-falo, and $3.41 to $3.91 rail and water from Buffalo when $1 barge and $2 to $2.50 New England freight rate are ob-tainable; $5.64 rail and water from Ala-bama to New England seaboard.

* All-rail rate.

† Rail-and-water rate.

CINCINNATI

Per gross ton, delivered Cincinnati:

Ala. fdy., sil. 1.75 to 2.25	$13.82
Ala. fdy., sil. 2.25 to 2.75	14.32
Tenn. fdy., sil. 1.75 to 2.25	13.82
N'th'n No. 2 foundry	$17.01 to 17.59
S'th'n Ohio silvery, 8%	21.02

Freight rates, $2.02 from Ironton and Jackson, Ohio; $3.82 from Birmingham.

PHILADELPHIA

Per gross ton at Philadelphia:

East. Pa. No. 2	$13.59 to $14.09
East. Pa. No. 2X	14.09 to 14.59
East. Pa. No. 1X	14.59 to 15.09
Basic (del'd east. Pa.)	13.50 to 14.00
Malleable	16.50 to 18.00
Stand. low phos. (f.o.b. east. Pa. furnace)	20.50 to 21.50
Con. b'r'g low phos. (f.o.b. furnace)	20.50 to 21.50
Va. No. 2	21.79
Va. No. 2X	22.29
Va. No. 2 plain	21.54 to 22.04
Va. No. 2X	22.04 to 22.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 84c. to $1.79 from eastern Pennsylvania furnaces: $4.67 from Virginia furnaces.

CLEVELAND

Per gross ton at Cleveland furnace:

N'th'n No. 2 fdy. (local delivery)	$15.00
S'th'n fdy. sil. 1.75 to 2.25	16.14
Malleable (local delivery)	15.00
Ohio silvery, 8 per cent	21.87
Stand. low. phos., Valley	23.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 63c. average local switch-ing charge; $3.12 from Jackson, Ohio; $6.14 from Birmingham.

BIRMINGHAM

Per gross ton, f.o.b. Birmingham dist. furnace:

No. 2 fdy., 1.75 to 2.25 sil.	$11.00
No. 2 soft, 2.25 to 2.75 sil.	11.50
Basic	11.00

CANADA

Per gross ton:

Delivered Toronto

No. 1 fdy., sil. 2.25 to 2.75	$22.60
No. 2 fdy., sil. 1.75 to 2.25	22.10
Malleable	22.60

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75	$24.00
No. 2 fdy., sil. 1.75 to 2.25	23.50
Malleable	24.00
Basic	$23.00 to 23.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard	$68.00
Foreign, 80%, Atlantic or Gulf port, duty paid	68.00

Prices for lots of one carload or more; extras applied on less than carload lots.

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$25.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50% (carloads)	$77.50
50% (less carloads)	85.00
75% (carloads)	126.00
75% (less carloads)	136.00
14% to 16% (f.o.b.) Welland, Ont., in carloads	31.00
14% to 18% (less carloads)	36.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
10%	$20.50	14%	$23.50
11%	21.00	15%	24.00
12%	21.50	16%	25.00
13%	22.50	17%	26.50

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
6%	$18.00	12%	$20.50
7%	18.50	13%	21.50
8%	18.75	14%	22.50
9%	19.00	15%	23.00
10%	19.50	16%	24.00
11%	20.00	17%	25.50

Other Ferroalloys

Ferrotungsten, per lb. wo. del., carloads	$1.08
Ferrotungsten, less carloads	$1.15 to $1.20
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	10.00c
Ferrochromium, 2% carbon	17.00c to 17.50c
Ferrochromium, 1% carbon	19.00c to 20.00c
Ferrochromium, 0.10% carbon	23.50 to 25.00c
Ferrochromium, 0.06% carbon	25.50c to 27.00c
Ferrovanadium, del., per lb. contained Va.	$3.05 to $3.30
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace in carloads	160.00
Ferrophosphorus, electric, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base per gross ton with $2 unitage	50.00
Ferrophosphorus, electric, 24% f.o.b. Anniston, Ala., per gross ton with $2.75 unitage	65.00
Ferromolybdenum, per lb. Mo., del.	95c.
Calcium molybdate, per lb. Mo., del.	80c.
Silico spiegel, per ton, f.o.b. fur-nace, car lots	42.50
Ton lots or less, per ton	47.50
Silico-manganese, gross ton, deliv-ered:	
2.50% carbon grade	105.00
1% carbon grade	115.00
Spot prices	$5 a ton higher

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	8c. to 8.50c.
Iron, low phos., Swedish, average 68½% iron	9c.
Iron, basic or foundry, Swedish, average 65% iron	8c.
Iron, basic or foundry, Russian, aver. 63% iron (nom.)	9c.
Manganese, Caucasian, washed 52%	*23c.
Manganese, African, Indian, 50-52%	*21c. to 22c.
Manganese, Brazilian, 46 to 49%	*18c.

	Per Gross Ton
Tungsten, Chinese wolframite	$10.00 to $10.25
Tungsten, domestic scheelite	$8.00 to $10.40
Chrome, 45%, Cr_2O_3, crude, c.i.f. Atlantic seaboard	16.00
Chrome, 48%, Cr_2O_3, c.i.f. Atlantic seaboard	18.00

*Quotations nominal in absence of sales.

Fluorspar

	Per Net Ton
Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines	$10.00
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines	12.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. At-lantic port, duty paid	$16.00 to 16.75
Domestic, No. 1 ground bulk, 85 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illi-nois and Kentucky mines	30.00

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$9.00 to $10.00
No. 2 heavy melting steel	7.75 to 8.25
No. 2 railroad wrought	9.50 to 10.00
Scrap rails	9.50 to 10.00
Rails 3 ft. and under	10.50 to 11.00
Sheet bar crops, ordinary	9.50 to 10.00
Compressed sheet steel	9.00 to 9.50
Hand bundled sheet steel	8.00 to 8.50
Hvy. steel axle turnings	7.50 to 8.00
Machine shop turnings	6.00 to 6.50
Short shov. steel turnings	6.00 to 6.50
Short mixed borings and turnings	6.00 to 6.50
Cast iron borings	6.00 to 6.50
Cast iron carwheels	8.00 to 8.50
Heavy breakable cast	8.00 to 8.50
No. 1 cast	9.50 to 10.50
Railr. knuckles and coup-lers	10.00 to 10.50
Rail coil and leaf springs	10.00 to 10.50
Rolled steel wheels	10.00 to 10.50
Low phos. billet crops	11.50 to 12.00
Low phos. sheet bar creps.	11.50 to 12.00
Low phos. plate scrap	10.50 to 11.00
Low phos. punchings	11.00 to 11.50
Steel car axles	11.00 to 11.50

CHICAGO

Delivered Chicago district consumers:

	Per Gross Ton
Heavy melting steel	$6.00
Shoveling steel	6.00
Frogs, switches and guards	$6.00
Hydraulic comp. sheets	4.00 to 4.50
Drop forge flashings	4.00 to 4.50
No. 1 busheling	4.00 to 4.50
Rolled carwheels	8.00 to 8.50
Railroad tires	8.00 to 8.50
Railroad leaf springs	8.00 to 8.50
Axle turnings	4.50 to 5.00
Steel couplers and knuckles	7.00 to 7.50
Coil springs	8.50 to 9.00
Axle turnings (elec. fur.)	5.50 to 6.00
Low phos. punchings	8.00 to 8.50
Low phos. plates, 12 in. and under	8.00 to 8.50
Cast iron borings	3.75 to 4.25
Short shoveling turnings	3.75 to 4.25
Machine shop turnings	2.75 to 3.75
Rerolling rails	8.00 to 8.50
Steel rails, less than 3 ft.	8.25 to 8.75
Steel rails, less than 2 ft.	8.75 to 9.25
Angle bars, steel	7.00 to 7.50
Cast iron carwheels	7.00 to 7.50
Railroad malleable	6.00 to 6.50
Agricultural malleable	5.00 to 5.50
* Relaying rails, 56 to 60 lb.	15.00 to 17.00
* Relay rails, 65 lb. and up	18.00 to 23.00

Per Net Ton

Iron angle and splice bars	$5.00 to $5.50
Iron arch bars, transoms	5.00 to 5.50
Iron car axles	11.00 to 11.50
Steel car axles	8.50 to 9.00
No. 1 railroad wrought	4.50 to 5.00
No. 2 railroad wrought	5.00 to 5.50
No. 1 busheling	2.50 to 3.00

No. 2 busheling	$2.00 to	$2.50
Locomotive tires, smooth	7.50 to	8.50
Pipe and flues	1.25 to	1.75
No. 1 machinery cast	6.25 to	6.75
Clean automobile cast	6.75 to	7.25
No. 1 railroad cast	5.50 to	6.00
No. 1 agricultural cast	5.75 to	6.25
Stove plate	5.50 to	6.00
Grate bars	5.25 to	5.75
Brake shoes	6.25 to	6.75

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

PHILADELPHIA

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$7.00 to	$7.50
No. 2 heavy melting steel	5.50 to	6.00
No. 1 railroad wrought	7.50 to	8.00
Bundled sheets	4.00 to	4.50
Hydraulic compressed, new	6.00 to	6.50
Hydraulic compressed, old	4.00 to	4.50
Machine shop turnings	3.50 to	4.00
Heavy axle turnings	5.50 to	6.00
Cast borings	3.50 to	3.75
Heavy breakable cast	9.00 to	9.50
Stove plate (steel works)	6.00 to	6.50
No. 1 low phos. heavy	10.00 to	10.50
Couplers and knuckles	9.00 to	9.50
Rolled steel wheels	9.00 to	9.50
No. 1 blast furnace	3.50 to	3.75
Spec. iron and steel pipe	6.50 to	7.00
Shafting	12.00 to	13.00
Steel axles	12.00 to	13.00
No. 1 forge fire	5.50 to	6.00
Cast iron carwheels		9.50
No. 1 cast	9.50 to	10.00
Cast borings (chem.)	8.00 to	10.00
Steel rails for rolling	9.00 to	9.50

CLEVELAND

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$7.00 to	$7.50
No. 2 heavy melting steel	6.50 to	7.00
Compressed sheet steel	6.00 to	6.50
Light bundled sheet stampings	4.00 to	4.50
Drop forge flashings	5.25 to	5.75
Machine shop turnings	4.00 to	4.50
Short shoveling turnings	4.50 to	5.00
No. 1 busheling	5.25 to	5.50
Steel axle turnings	5.00 to	5.50
Low phos., billet crops	10.00 to	11.00
Cast iron borings	4.75 to	5.25
Mixed borings and short turnings	4.75 to	5.25
No. 2 busheling	4.75 to	5.25
No. 1 cast	7.50 to	8.00
Railroad grate bars	5.00 to	5.50
Stove plate	5.00 to	5.50
Rails under 3 ft.	8.50 to	9.00
Rails for rolling	8.50 to	9.00
Railroad malleable	6.75 to	7.00
Cast iron carwheels		8.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:

No. 1 heavy melting steel	$7.00 to	$7.50
No. 2 heavy melting scrap	6.25 to	6.75
Scrap rails	6.75 to	7.25
New hydraul. comp. sheets	6.25 to	6.75
Old hydraul. comp. sheets		5.00
Drop forge flashings	6.25 to	6.75
No. 1 busheling	6.25 to	6.75
Hvy. steel axle turnings		6.00
Machine shop turnings	4.00 to	4.50
Knuckles and couplers		10.00
Coil and leaf springs		10.00
Rolled steel wheels		10.00
Low phos. billet crops	9.00 to	9.50
Short shov. steel turnings	5.50 to	6.00
Short mixed borings and turnings	3.75 to	4.25
Cast iron borings	3.75 to	4.25
No. 2 busheling	3.50 to	4.00
Steel car axles	10.00 to	11.00
Iron axles	10.00 to	11.00
No. 1 machinery cast	9.50 to	10.00
No. 1 cupola cast	8.50 to	9.00
Stove plate	6.50 to	7.00
Steel rails, 3 ft. and under	9.25 to	9.75
Cast iron carwheels	8.00 to	9.00
Industrial malleable	7.00 to	7.50
Railroad malleable	7.00 to	7.50
Chemical borings	7.50 to	8.00

BIRMINGHAM

Per gross ton delivered consumers' yards:

Heavy melting steel	$7.50 to	$8.00
Scrap steel rails	8.00 to	8.50
Short shoveling turnings		4.00
Stove plate		6.00
Steel axles		9.00
Iron axles		9.00
No. 1 railroad wrought	4.50 to	5.00
Rails for rolling	8.00 to	8.50
No. 1 cast		8.50
Tramcar wheels		8.50
Cast iron borings, chem.		8.50

ST. LOUIS

Per gross ton delivered consumers' yards:

Selected heavy steel	$6.00 to	$6.50
No. 1 heavy melting	5.50 to	6.00
No. 2 heavy melting	5.00 to	5.50
No. 1 locomotive tires	5.00 to	5.50
Misc. stand-sec. rails	6.00 to	6.50
Railroad springs	7.25 to	7.75
Bundled sheets	2.00 to	2.50
No. 2 railroad wrought	5.00 to	5.50
No. 1 busheling	3.50 to	4.00
Cast iron borings and shoveling turnings	2.75 to	3.25
Iron rails	7.00 to	7.50
Rails for rolling	7.50 to	8.00
Machine shop turnings	1.50 to	2.00
Heavy turnings	3.00 to	3.50
Steel car axles	8.50 to	9.00
Iron car axles	11.00 to	11.50
Wrot. iron bars and trans.	5.00 to	5.50
No. 1 railroad wrought	3.50 to	4.00
Steel rails less than 3 ft.	7.50 to	8.00
Steel angle bars	6.00 to	6.50
Cast iron carwheels	5.50 to	6.00
No. 1 machinery cast	6.50 to	7.00
Railroad malleable	4.00 to	4.50
No. 1 railroad cast	6.25 to	6.75
Stove plate (steel works)	5.50 to	6.00
Relay. rails, 60 lb. and under	16.00 to	16.50
Relay. rails, 60 lb. and over	20.00 to	21.00
Agricult. malleable	4.00 to	4.50

NEW YORK

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	$4.00 to	$4.50
No. 2 heavy melting steel	2.75 to	3.00
Heavy melting steel (yard)		1.50
No. 1 hvy. breakable cast	5.00 to	5.25
Stove plate (steel works)	2.25 to	5.75
Machine shop turnings	0.75 to	1.25
Short shoveling turnings	0.75 to	1.25
Cast borings	0.50 to	1.00
No. 1 blast furnace	0.50 to	1.00
Steel car axles	8.00 to	8.50
Spec. iron and steel pipe	2.00 to	2.50
Forge fire		3.25
No. 1 railroad wrought	4.00 to	4.50
No. 1 yard wrought, long	3.25 to	3.50
Rails for rolling	5.00 to	5.50
No. 1 cast	5.50 to	6.00
No. 2 cast	4.50 to	5.00
Stove plate (foundry)		4.50
Malleable cast (railroad)	4.00 to	4.50
Cast borings (chemical)	6.00 to	6.50

Per gross ton, delivered local foundries:

No. 1 machinery cast	$9.00 to	$9.50
No. 1 hvy. cast (cupola size)	7.50 to	8.00
No. 2 cast	4.00 to	4.50

BOSTON

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	$3.00 to	$3.25
Scrap T rails	2.50 to	2.75
Machine shop turnings	0.80 to	1.00
Cast iron borings		1.05
Bundled skeleton, long	2.00 to	2.10
Forge flashings	3.00 to	3.50
Blast furnace scrap	0.90 to	1.00
Forge scrap	3.00 to	3.25
Shafting	9.50 to	10.00
Steel car axles	9.00 to	9.50
Wrought pipe	4.00 to	4.25
Rails for rolling	4.50 to	5.00
Cast iron borings, chemical	7.00 to	7.25

Per gross ton delivered consumers' yards:

Textile cast	$7.00 to	$7.50
No. 1 machinery cast	7.50 to	8.00
Stove plate	5.00 to	5.25
Railroad malleable	8.00 to	8.50

CINCINNATI

Dealers' buying prices per gross ton:

Heavy melting steel	$6.00 to	$6.50
Scrap rails for melting	6.00 to	6.50
Loose sheet clippings	1.50 to	2.00
Bundled sheets	3.75 to	4.25
Cast iron borings	3.25 to	3.75
Machine shop turnings	3.00 to	3.50
No. 1 busheling	4.50 to	5.00
No. 2 busheling	2.75 to	3.25
Rails for rolling	6.50 to	7.00
No. 1 locomotive tires	7.50 to	8.00
Short rails	9.00 to	9.50
Cast iron carwheels	6.50 to	7.00
No. 1 machinery cast	8.25 to	8.75
No. 1 railroad cast	7.75 to	8.25
Burnt cast	4.25 to	4.75
Stove plate	4.25 to	4.75
Agricultural malleable	7.75 to	8.25
Railroad malleable	8.25 to	8.75

DETROIT

Dealers' buying prices per gross ton:

Hvy. melting steel	$5.50 to	$6.00
Borings and short turnings	3.50 to	4.00
Long turnings	2.75 to	3.25
No. 1 machinery cast	7.75 to	8.25
Automotive cast	8.00 to	8.50
Hydraul. comp. sheets	5.25 to	5.75
Stove plate	3.75 to	4.25
New No. 1 busheling	4.75 to	5.25
Old No. 2 busheling	2.50 to	3.00
Sheet clippings	2.00 to	2.50
Flashings	4.00 to	4.50

CANADA

Dealers' buying prices per gross ton:

	Toronto	Montreal
Heavy melting steel	$7.00	$6.00
Rails, scrap	7.00	6.00
No. 1 wrought	6.00	8.00
Machine shop turnings	2.00	2.00
Boiler plate	5.00	4.50
Heavy axle turnings	2.50	2.50
Cast borings	2.00	2.00
Steel borings	2.00	2.00
Wrought pipe	2.00	3.00
Steel axles	7.00	9.00
Axles, wrought iron	7.00	11.00
No. 1 machinery cast	12.50	10.00
Stove plate	10.00	8.00
Standard carwheels	10.00	8.50
Malleable	10.00	8.00

Warehouse Prices for Steel Products

PITTSBURGH

	Base per Lb.
Plates	2.85c.
Structural shapes	2.85c.
Soft steel bars and small shapes	2.60c.
Reinforcing steel bars	2.60c.
Cold-finished and screw stock—	
Rounds and hexagons	2.95c.
Squares and flats	3.45c.
Hoops and bands, under ¼ in.	2.95c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.15c.
Galv. sheets (No. 24), 25 or more bundles	3.65c.
Hot-rolled sheets (No. 10)	3.10c.
Galv. corrug. sheets (No. 28), per square (less than 3750 lb.)	$3.74
Spikes, large	2.50c.
Small	2.75c. to 2.90c.
Boat	3.00c.
Track bolts, all sizes, per 100 count, 70 per cent off list	
Machine bolts, 100 count, 70 per cent off list	
Carriage bolts, 100 count, 70 per cent off list	
Nuts, all styles, 100 count, 70 per cent off list	
Large rivets, base per 100 lb.	$3.00
Wire, black, soft ann'l'd, base per 100 lb.	2.75
Wire, galv. soft, base per 100 lb.	3.20
Common wire nails, per keg	2.35
Cement coated nails, per keg	2.35

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.00c.
Soft steel bars	2.75c.
Reinforc. bars, billet steel	1.35c. to 1.50c.
Rail steel reinforcement	1.15c. to 1.25c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons	3.00c.
Flats and squares	3.50c.
Bands, ¼ in. (in Nos. 10 and 12 gages)	2.95c.
Hoops (No. 14 gage and lighter)	3.50c.
Hot-rolled annealed sheets (No. 22)	3.55c.
Galv. sheets (No. 24)	4.10c.
Hot-rolled sheets (No. 10)	3.20c.
Spikes (¼ in. and lighter)	3.45c.
Track bolts	4.30c.
Rivets, structural	3.75c.
Rivets, boiler	3.75c.
	Per Cent Off List
Machine bolts	70
Carriage bolts	70
Coach and lag screws	70
Hot-pressed nuts, sq., tap. or blank	70
Hot-pressed nuts, hex., tap. or blank	70
Hex. head cap screws	80 and 10
Cup point set screws	75 and 10
Flat head bright wood screws	52½ and 10
Spring cotters	60
Stove bolts	80
Rd. hd. tank rivets, 7/16 in. and smaller	65
Wrought washers	$4.50 off list
No. 8 black ann'l'd wire, per 100 lb.	$3.45
Com. wire nails, base per keg	2.30
Cement c't'd nails, base per keg	2.30

NEW YORK

	Base per Lb.
Plates and struc. shapes	2.70c. to 3.10c.
Soft steel bars, small shapes	2.70c. to 3.10c.
Iron bars	3.24c.
Iron bars, fwed. charcoal	6.00c. to 6.50c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.39c.
Flats and squares	3.89c.
Cold-roll. strip, soft and quarter hard	4.95c.
Hoops	3.30c.
Bands	3.30c.
Hot-rolled sheets (No. 10)	3.00c. to 3.25c.
Hot-rolled ann'l'd sheets (No. 24*)	3.50c.
Galvanized sheets (No. 24*)	4.00c.
Long terne sheets (No. 24)	4.50c.
Standard tool steel	12.00c.
Wire, black annealed (No. 10)	3.60c.
Wire, galv. annealed (No. 10)	4.05c.
Tire steel, ¾ x ⅛ in. and larger	3.40c.
Smooth finish, 1 to 2¾ x ¼ in. and larger	3.75c.
Open-hearth spring steel, bases	4.50c. to 7.00c.
Common wire nails, base, per keg	$2.60
	Per Cent Off List
Machine bolts, cut thread:	
¾ x 6 in. and smaller	.65 to 65 and 10
1 x 30 in. and smaller	.65 to 65 and 10
Carriage bolts, cut thread:	
½ x 6 in. and smaller	.65 to 65 and 10
⅝ x 20 in. and smaller	.65 to 65 and 10
Boiler Tubes:	Per 100 Ft.
Lap welded, 2-in.	$18.05
Seamless welded, 2-in.	19.24
Charcoal iron, 2-in.	24.94
Charcoal iron, 4-in.	63.65

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.00c.
Cold-fin. rounds, shafting, screw stock	3.36c.
Hot-rolled annealed sheets (No. 24)	3.80c.
Galv. sheets (No. 24)	4.35c.
Hot-rolled sheets (No. 10)	3.45c.
Black corrug. sheets (No. 24)	3.85c.
Galv. corrug. sheets	4.40c.
Structural rivets	4.00c.
Boiler rivets	4.00c.
	Per Cent Off List
Tank rivets, ⅞ in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	70
Carriage bolts	70
Lag screws	70
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more	70
Less than 200 lb.	60
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more	70
Less than 200 lb.	60

PHILADELPHIA

	Base per Lb.
*Plates, ¼-in. and heavier	2.10c.
*Structural shapes	2.10c.
*Soft steel bars, small shapes, iron bars (except bands)	2.10c.
Reinforc. steel bars, sq., twisted and deform.	2.30c.
Cold-fin. steel, rounds and hex.	3.35c.
Cold-fin. steel, sq. and flats	3.85c.
*Steel hoops	2.65c.
*Steel bands, No. 12 to 3/16 in., incl.	2.40c.
Spring steel	5.00c.
Hot-rolled annealed sheets (No. 24)	3.55c.
Galvanized sheets (No. 24)	3.75c.
*Hot-rolled and annealed sheets (No. 10)	2.55c.
Diam. pat. floor plates, ¼ in.	5.00c.
Swedish iron bars	5.60c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices for 15,000-lb. orders; extra apply for smaller quantities.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	2.95c.
Soft steel bars	2.75c.
Reinforc. steel bars	1.75c. to 1.95c.
Cold-fin. rounds and hex.	2.95c.
Cold-fin. flats and sq.	3.45c.
Flat rolled steel under ¼ in.	3.00c.
Cold-finished strip	5.55c.
Hot-rolled annealed sheets (No. 24)	3.25c.
Galvanized sheets (No. 24)	3.75c.
Hot-rolled sheets (No. 10)	3.00c.
Black ann'l'd wire, per 100 lb.	$2.75
No. 9 galv. wire, per 100 lb.	3.20
Com. wire nails, base per keg	2.35

*Net base, including boxing and cutting to length.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.00c.
New billet reinforc. bars	3.00c.
Rails steel reinforc. bars	3.00c.
Hoops	3.90c.
Bands	3.20c.
Cold-fin. rounds and hex.	3.33c.
Squares and flats	3.83c.
Hot-rolled annealed sheets (No. 24)	3.75c.
Galv. sheets (No. 24)	4.25c.
Hot rolled sheets (No. 10)	3.30c.
Structural rivets	4.20c.
Small rivets	60 per cent off list
No. 9 ann'l'd wire, per 100 lb.	$3.00
Com. wire nails, base per keg (10 to 49 kegs)	2.65
Larger quantities	2.50
Cement c't'd nails, base 100-lb. keg	2.95
Chain, per 100 lb.	10.25
	Net per 100 Ft.
Seamless steel boiler tubes, 2-in.	$17.50
4-in.	36.00
Lap-welded steel boiler tubes, 2-in.	16.50
4-in.	34.50

BUFFALO

	Base per Lb.
Plates and struc. shapes	3.20c.
Soft steel bars	2.95c.
Reinforcing bars	2.95c.
Cold-fin. flats and sq.	3.50c.
Rounds and hex.	3.05c.
Cold-rolled strip steel	5.25c.
Hot-rolled annealed sheets (No. 24)	3.70c.
Galv. sheets (No. 24)	4.05c.
Bands	3.30c.
Hoops	3.95c.
Hot-rolled sheets (No. 10)	3.45c.
Com. wire nails, base per keg	$2.60
Black wire, base per 100 lb.	3.25

BOSTON

	Per Lb.
*Beams, channels, angles, tees, zees	3.00c.
*H beams and shapes	3.00c.
*Plates—sheared, tank, and univ. mill, ¼ in. thick and heavier	3.00c.
Floor plates, diamond pattern	5.25c.
*Bar and bar shapes (mild steel)	2.90c.
*Bands 3/16 in. thick and No. 12 ga. incl.	3.40c.
Hoops, No. 14 ga. and lighter	4.90c. to 5.40c.
*Half rounds, hf. ovals, ovals and bevels	4.15c.
Tire steel, rd. edge 1½ x ⅛ in. and larger	4.50c.
Smaller sizes	4.75c.
Cold-finished rounds and hexagons	3.60c.
Cold-rolled strip steel	5.20c.
Cold-finished squares and flats	4.10c.
*Blue annealed sheets No. 10 ga.	3.15c.
One pass cold-rolled sheets No. 24 ga.	3.50c.
Blued stove pipe sheets No. 24 ga.	3.90c.
Galvanized steel sheets No. 24 ga.	4.06c.
Lead coated (long ternes) No. 24 ga.	5.00c.

*Base prices for 15,000 lb. orders, extras apply for smaller quantities.

PACIFIC COAST

	Base per Lb.		
	San Francisco	Los Angeles	Seattle
Plates and struc. shapes, ¼-in. and heavier	3.15c.	3.30c.	3.00c.
Soft steel bars	3.15c.	3.30c.	3.00c.
Reinforcing bars	3.00c.	3.00c.	3.00c.
Hot-rolled annealed sheets (No. 24)	3.90c.	4.20c.	4.50c.
Hot-rolled sheets (No. 10)	3.375c.	3.50c.	4.00c.
Galv. sheets (No. 24)	4.55c.	4.50c.	5.00c.
*Struc. rivets, ½ in. and larger, less than 1000 lbs.	5.75c.	5.00c.	4.90c.
*Cold finished steel			
Rounds	5.50c.	5.50c.	4.50c.
Squares and hexagons	6.75c.	6.75c.	5.75c.
Flats	7.25c.	7.25c.	6.75c.

Common wire nails, base per keg in less carloads — $2.90, $2.80, $3.00

*Subject to deductions for quantity.

Machine Tool Trade Developing Slowly

October May Show Second Consecutive Monthly Increase in Orders

ALTHOUGH machine tool business is developing very slowly, there is a possibility that October will show a slight increase in total sales over September, which would be the second consecutive monthly gain.

The local committees which will work as a part of the National Committee on Industrial Rehabilitation are getting organized, but thus far no business has developed as a result of the activities of this part of the organization.

Inquiries have increased moderately this month, but in almost all instances are for only one or two machines. Orders for the rebuilding of old tools have given some of the machine tool shops a little additional work.

NORTH ATLANTIC

Merchants Refrigerating Co., 17 Varick Street, New York, has plans for improvements and alterations in 10-story building at 501-21 West Sixteenth Street for new cold storage and refrigerating plant unit in chain of such plants. Cost $200,000 with equipment. John B. Snook Sons, 299 Broadway, are architects.

Signal Supply Officer, Army Base, Brooklyn, asks bids until Oct. 31 for 1000 capacitors (Circular 20); until Nov. 7, 56,000 ft. cable, 2370 ft. cable, and 59 reels (Circular 21), resistors, coils, armatures, voltmeters, ammeters,. rheostats, switches, plugs, capacitors, etc. (Circular 17); until Nov. 15, 200 crank and 200 carriers (Circular 19), 150 reel carts (Circular 18).

General Can Co., Brooklyn, has been organized by Irving Nathanson, 295 West Eleventh Street, New York, and Louis S. Aldrich, 7 Bretton Road, Yonkers, N. Y., to manufacture tin cans and containers.

Board of Trustees, St. Joseph's Hospital, Far Rockaway, L. I., has asked bids on general contract for one-story workshop and mechanical service building. Cost over $60,000 with equipment. Henry V. Murphy, 208 Livingston Street, Brooklyn, is architect.

Fada Radio & Electric Corpn., 14 Orchard Street, Long Island City, manufacturer of radio equipment and parts, has advanced production to full time schedule, with normal working quota.

Vernon Commercial Body Builders, Inc., 43-05 Vernon Boulevard, Long Island City, manufacturer of commercial automobile bodies, has leased manufacturing building at 368 Vernon Boulevard.

M. & T. Sign Corpn., New York, has been organized by Sidney I. Davis, 216 West 100th Street, and associates, capital $125,000, to manufacture electric signs and displays.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 1 for 57 electric drills and reamers (Schedule 8949), two frequency changers (Schedule 8950), one motor-driven metal-cutting circular saw (Schedule 8924), 12,000 jack knives (Schedule 8946); until Nov. 8, one electric arc welding set and spare parts (Schedule 8965); until Nov. 8, 7500 ft. submarine control cable (Schedule 8960) all for New York Navy Yard.

Dickenson Decorating Co., Inc., New York, recently organized, has leased space in building at 118 East Twenty-eighth Street for manufacture of metal novelties.

Atlas Fence Co., Inc., 37 Verona Avenue, Newark, manufacturere of iron fencing, ornamental bronze fence fittings, etc., is running on a full time production schedule with regular working quota.

Passaic Economy Iron Works, recently organized, has leased building at 804 Paterson Avenue, East Rutherford, N. J., for establishment of a plant. Company fabricates and erects structural steel and ornamental iron.

Tuckerton Railroad Co., Tuckerton, N. J., has secured fund of $45,000 and will use part of appropriation for locomotive repairs, parts replacements and other mechanical work.

Essex County Board of Vocational Education, Hall of Records, Newark, will ask bids early in November for equipment and supplies for vocational schools. Robert O. Beebe is director.

Jacques Wolf & Co., 350 Lexington Avenue, Clifton, N. J., manufacturers of industrial chemicals, etc., have purchased 5½ acre tract and group of factory buildings at Carlstadt, N. J., and will remodel for new plant. Cost over $70,000.

Universal Boiler & Radiator Co., Bayonne, N. J., has been organized by Michael Ryan, Jersey City, N. J., and Jeremiah Hayes, Bayonne, care of Louis Bolstein, 473 Broadway, Bayonne, representative, capital $50,000, to manufacture boilers, radiators and other heating equipment.

Sun Tube Co., Long Avenue, Hillside, Newark, manufacturer of collapsible metal tubing, etc., has plans for a one-story addition. Cost about $50,000 with equipment. Company will soon develop two new affiliated lines of production.

De Forest Radio Co., Factory Street, Passaic, N. J., manufacturer of radio equipment, parts, etc., is being reorganized under direction of Leslie S. Gordon and Ralph E. Lum, receivers, and new company is expected to take over and operate plant in November.

J. E. Mergott Co., 318 Jelliff Avenue, Newark, manufacturer of metal specialties, has increased production schedule, reinstating a number of employees.

Keystone Lubricating Co., Twenty-first and Clearfield Streets, Philadelphia, manufacturer of lubricating oils, etc., has awarded general contract to Frank G. Stewart, 1518 Locust Street, for one-story plant to replace unit recently destroyed by fire. Cost about $175,000 with equipment.

Supervising Architect, Treasury Department, Washington, will ask bids soon on general contract for multi-story naval hospital at Philadelphia, with power house, mechanical shops, refrigerating plant and other mechanical units. Cost about $2,250,000. Karcher & Smith, 1520 Locust Street, Philadelphia, are architects.

Dial Rock Co., Wyoming, Pa., has plans for new coal breaker on Mount Lookout, near mining properties. Cost about $100,000 with machinery.

Philadelphia Macaroni Co., Eleventh and Catherine Streets, Philadelphia, plans rebuilding part of five-story plant recently destroyed by fire. Loss over $40,000 with equipment.

Phoenix Mfg. Co., Catasauqua, Pa., manufacturer of horse shoes, and kindred iron products, has resumed operations following shutdown for about two months, recalling 75 men.

Pittston Coal Co., Wilkes-Barre, Pa., has reopened its local colliery reinstating about 500 men.

Pennsylvania Railroad Co., 15 North Thirty-second Street, Philadelphia, C. E. Walsh, purchasing agent, asks bids until Nov. 4 for steel boiler tubes (Contract 16-1932), and steel tires (Contract 17-1932).

Niagara Searchlight Co., 800 Ferry Avenue, Niagara Falls, N. Y., manufacturer of searchlights, frames, etc., is planning early establishment of branch plant at Niagara Falls, Ont., where property is being acquired.

American Radiator Co., 1803 Elmwood Avenue, Buffalo, has increased production at local malleable iron works, adopting five-day week, recalling about 250 men.

Alco Products, Inc., Dunkirk, N. Y., subsidiary of American Locomotive Co., New York, is increasing operations. Company recently secured manufacturing rights of Gyro cracking process for gasoline production from Gyro Process Co., Detroit, and has obtained order for equipment for such a plant with capacity for handling 1000 bbl. of crude oil daily from Navy Department, apan, to be located at Kudamatsu, Japan, including towers, trays, heat exchangers, piping, etc.

Commanding Officer, Watervliet Arsenal, Watervliet, N. Y., asks bids until Nov. 1 for two alloy steel forgings, breech rings, for 75-mm. guns (Circular 13).

SOUTH ATLANTIC

Pangborn Corpn., Hagerstown, Md., manufacturer of sandblast equipment, dust-collecting systems, etc., has awarded general contract to Rust Engineering Co., Pittsburgh, for one-story addition, including machine shop for finishing castings, extension to present shop, and storage and distributing unit. Cost over $70,000 with equipment.

Board of District Commissioners, District Building, Washington, asks bids until Nov. 1 for quantity of 30-, 24-, 20- and 16-in. gate valves; until Nov. 2, 6000 metal street traffic markers.

City Council, High Point, N. C., E. M. Knox, city manager, is arranging fund of $1,000,000 for a municipal electric light and power plant, including prime movers, electric traveling crane and other equipment.

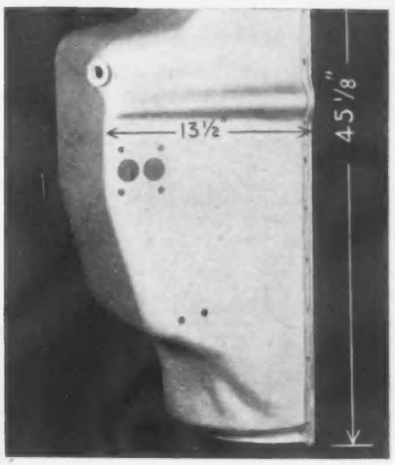
Atlantic Coast Line Railway, Wilmington, N. C., has resumed operations at repair shops at Rocky Mount, N. C., recalling about 750 men.

Atlantic Varnish & Paint Co., Lester and Pear Streets, Richmond, Va., plans rebuilding part of plant recently destroyed by fire. Loss about $50,000 with equipment.

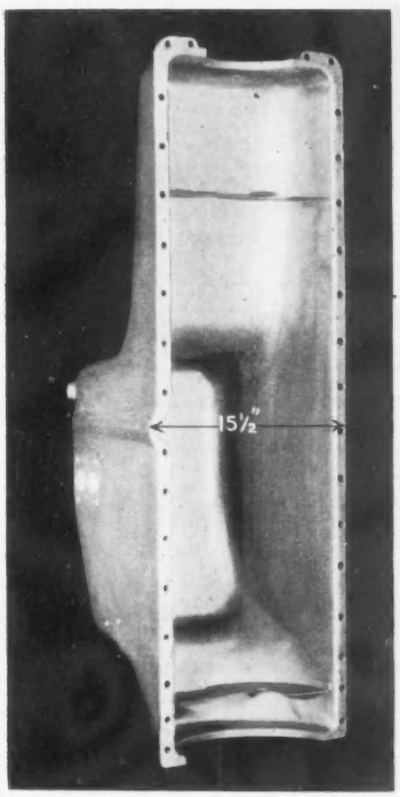
Annapolis Metropolitan Sewerage Commission, Municipal Building, Annapolis, Md., J. Garland Healey, chairman, will ask bids in 60 to 90 days for pumping plant in connection with new treatment works. Cost $100,000

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Nov. 2 for one 31-kva. gasoline engine-driven generating set, with gasoline tanks, piping, switchboard and accessories, for naval air station, Anacostia, D. C. (Specification 7070).

Look at  *the* **SIZE** *and* **DEPTH** OF THIS STAMPING!



Two views—showing the exact dimensions—of one of the largest truck motor oil pans made — designed by our engineers and stamped in our plant from one sheet of 16-gauge steel.



Do not hesitate to ask us if your product can be produced in pressed steel.

This manufacturer asked us: Is pressed steel practical for an oil pan that will require such an unusual shape? Can you—economically—manufacture a stamping of this depth and size?

The motor was designed but how the oil pan was to be made was still a question. Our stamping engineers started from scratch.

We designed this oil pan; made up an actual sample; and proved to their satisfaction which has been borne out in actual performance that we could:—

produce this in a deep drawn stamping at a price lower than any other method;

produce an oil pan far more efficient in use, lighter in weight and with a terrific saving in costly machining over any other method;

produce it quicker and give speedier delivery—Transue & Williams Steel Forging Corporation, Alliance, Ohio.

TRANSUE & WILLIAMS

Designers of

DEEP DRAWN STAMPINGS

City Commission, Quincy, Fla., J. P. Smith, city clerk, asks bids until Nov. 14 for a 300-000-gal. capacity elevated steel tank on 100-ft. tower. W. Austin Smith, Lynch Building, Jacksonville, Fla., is consulting engineer.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 8 for one motor-driven notching press (Schedule 8964) for Norfolk Navy Yard; water meters and spare parts (Schedule 8955) for Annapolis Navy Yard; 10 electric portable submersible pumps (Schedule 8933) for Sewall's Point, Va., Navy Yard; 4100 smokeless powder steel packing boxes (Schedule 8957) for White Plains, N. Y.; steel forgings (Schedule 8953), 20 gate valves and seats (Schedule 8870), 10 non-return valves (Schedule 8895) for Boston, Brooklyn, Philadelphia and other navy yards; steel forgings (Schedule 8952), two gasoline motor-driven shop trucks and four platform trucks (Schedule 8951), one 75-ton railroad track scale and one motor truck scale (Schedule 8954), 126 bronze valves (Schedule 8948) and 21,920 aluminum cartridge tanks and inspection gages (Schedule 8957) for Eastern and Western yards.

Standard Oil Co., 1635 Fourth Street, Columbus, Ga., has taken out permit for new bulk oil storage and distributing plant, with steel tanks, steel barrel racks, electric hoisting equipment, etc. Cost about $35,000 with equipment. J. C. Pittman is company engineer.

Mississippi Glass Co., Morgantown, W. Va., is resuming operations at wire glass manufacturing plant, following curtailment for several weeks, and will recall about 150 men.

Department of Public Service, William Sydow, director, Miami, Fla., has plans for municipal airport in Biscayne Bay, with hangars, repair shops and other field units. Cost over $500,000 with equipment.

SOUTHWEST

City Council, Hominy, Okla., will take bids soon for a municipal electric light and power plant. Cost about $150,000 with equipment. Bond issue has been approved.

St. Louis-Southwestern Railroad Co., St. Louis, is increasing production schedule at repair shops at Pine Bluff, Ark., and Tyler, Tex., giving full time work to employees heretofore on half-time basis.

Indian Territory Illuminating Oil Co., Bartlesville, Okla., is considering new gasoline refining plant near Oklahoma City, Okla., with storage and distributing facilities. Cost about $40,000 with equipment.

American Airways, Inc., Lambert-St.Louis Flying Field, St. Louis, has secured 200 acre tract at Cape Girardeau, Mo., for branch airport, and plans erection of hangar, repair shop and other field structures.

City Council, Kennett, Mo., plans municipal electric light and power plant. Cost about $150,000. Loan in that sum will be arranged soon. Elmer Hicklin, mayor, at head of project.

State Highway Department, Jefferson City, Mo., has plans for one-story equipment storage, service and repair buildings at Albany and Keytes, Mo., where sites have been purchased. T. H. Cutler is chief engineer.

Board of Trustees, Haskell Institute, Lawrence, Kan., has asked bids for one-story and basement mechanical and service shop, 135 x 171 ft. Cost about $45,000 with equipment. L. T. Webber, is construction superintendent, in charge.

City Council, Conway, Ark., plans extensions in municipal electric light and power plant, including installation of 750-hp. Diesel engine-generator unit and auxiliary equipment.

Well Machinery & Supply Co., Fort Worth, Tex., has arranged for purchase of plant and business of California Meter Co., 687 South Clarence Street, Los Angeles, manufacturer of water meters and parts. Plant will be removed to Fort Worth and consolidated with works of purchasing company, where unit will be established for output of about 1000 meters a month.

Board of Wichita County Supervisors, Wichita Falls, Tex., asks bids until Nov. 7 for one power maintenance machine and one 12-ft. grader for highway service.

Constructing Quartermaster, Fort Sam Houston, Tex., asks bids until Nov. 12 for one-story engine test block building, Duncan Field, for aircraft engine service.

Akin Canning Co., W. F. Akin, head, Jacksonville, Tex., care of Chamber of Commerce, Jacksonville, plans establishment of canning plant. Cost about $25,000 with equipment.

Houston Armature Works, 4 Preston Avenue, Houston, Tex., plans rebuilding part of electrical equipment manufacturing plant, recently destroyed by fire.

Gilbert Brass Foundry, 4069 Park Avenue, St. Louis, has been organized to take over A. Gilbert & Sons Brass Foundry Co., formerly at 4019 Forest Park Boulevard, manufacturer of brass and other metal castings.

Laclede Stoker Co., Fred W. Pripe, president, 4438 Hunt Avenue, St. Louis, has been organized with a capital of $300,000 to take over and expand company of same name, manufacturer of stokers, parts, and kindred equipment.

Eagle Foundry Company, Belleville, Ill., manufacturer of metal castings, has increased its capitalization from $100,000 to $200,000 for expansion.

CENTRAL DISTRICT

Board of Public Education, Administration Building, Pittsburgh, asks bids until Nov. 1 for steel lockers for Overbrook high school. H. W. Cramblet is secretary.

McCann-Shields Paint Co., 27 Alexander Street, Pittsburgh, has asked bids on general contract for three-story and basement storage and distributing plant, 60 x 60 ft. Cost over $30,000 with equipment. O. M. Topp, Stevenson Building, is architect.

American Window Glass Co., Farmers Bank Building, Pittsburgh, has reopened sheet glass plant at Belle Vernon, Pa., recalling about 350 men.

Olive Stove Works, Rochester, Pa., manufacturer of stoves, ranges, etc., has doubled operations in foundry from two-day to four-day week.

Youngstown Steel Door Co., Youngstown, Ohio, subsidiary of Youngstown Sheet & Tube Co., has secured order from Pennsylvania Railroad Co. for 1800 freight car steel doors, and is also scheduled for order for 1400 steel doors for automobile freight cars for same railroad.

Dura Co., Toledo, Ohio, has been organized to take over plant and equipment of company of same name at 4500 Detroit Street, and its subsidiary Dura Building Co., and will continue production of automobile regulators, hardware, die stampings and castings. First noted company recently sold its Duraware division to Reynolds Spring Co., Jackson, Mich. F. A. Judson is president of new organization; A. F. Seubert, vice-president and general manager.

Department of Public Welfare, Ninth and Oak Streets, Columbus, Ohio, John McSweeney, director, asks bids until Oct. 31 for boiler, stoker and auxiliary equipment for power plant at institution at London, Ohio; also similar equipment for power house at institution at Gallipolis, Ohio.

Hanson Clutch & Machinery Co., Tiffin, Ohio, manufacturer of excavating machines and kindred equipment, is increasing production schedule and has reinstated number of men.

Palmer Match Co., Kenmore, Akron, Ohio, has approved plans for one-story addition. Cost $300,000 with machinery. Hannah & Sterling, Publication Building, Pittsburgh, are architects. C. G. Allen, plant superintendent.

Amanda Cast Aluminum Co., Inc., Amanda, Ohio, care of R. S. Cunningham, Kresge Building, Lancaster, Ohio, has been organized by O. H. Bope and John R. Christy, Amanda, to manufacture cast aluminum ware and kindred cast metal products.

Contracting Officer, Material Division, Wright Field, Dayton, Ohio, asks bids until Oct. 31 for 22 counterbalance propeller blades (Circular 164), 3000 solderless elbows, 600 solderless nipples, 3000 solderless nuts and 1050 solderless tees (Circular 159); until Nov. 1, for 40 tail wheel assemblies (Circular 171); until Nov. 2, seven torque stand platforms (Circular 165); until Nov. 7, 1018 carbon steel hand reamers (Circular 161); 55 oxygen tank bracket retainer clamps, 22 bracket assembly oxygen regulators, 10 oxygen regulator brackets, 110 landing gear oleo strut fairing supports, smoke screen control cable pulley brackets, control cable stop clamp assemblies, etc.; until Nov. 8, round head drive screws and sheet metal screws (Circular 174); two electric muffle heating furnaces (Circular 176).

Fort Pitt Tool & Supply Co., Toledo, Ohio, care of Harry Levison, Spitzer Building, representative, has been organized by Benjamin F. Hausman, Toledo and associates to manufacture tools and mechanical equipment.

New York Central Railroad Co. has increased operations at Cleveland passenger car shops, recalling a number of men. Locomotive shops at Bucyrus, Ohio, are also running on higher production schedule, with larger working quota.

Herman Falter Packing Co., 378 Greenlawn Avenue, Columbus, Ohio, meat packer, has awarded general contract to Leo S. Ruisinger, 735 South Fifth Street, for two-story and basement addition, 47 x 73 ft. Cost about $30,000 with equipment.

McCray Refrigerator Co., Kendallville, Ind., manufacturer of refrigerators and equipment, plans rebuilding part of plant recently destroyed by fire. Loss about $50,000 with equipment.

Sears Corpn., Shelbyville, Ind., has been organized by W. H. Sears, 1321 North Meridian Street, Indianapolis, R. W. Sears and O. W. Cross, capital $100,000, to manufacture electric refrigerator cabinets, radio cabinets and kindred products. Company has taken over two local factories and will operate as plants Nos. 1 and 2; production has been started at last noted with about 150 men, and No. 1 plant will be made ready for operations in November, with total working quota of 400 men at both factories.

Marmon Motor Car Co., 1101 West Morris Street, Indianapolis, will carry out extensive production schedule for new 16-cylinder model automobile, and will devote operations in future to cars of this type, discontinuing manufacture of medium-priced line of automobiles.

Pumper Service & Equipment Co., Inc., Indianapolis, has been organized by Leonard P. Maddox and Clyde R. Merrick, Brill Road, to manufacture water-treating and pumping machinery.

Anaconda Wire & Cable Co., Muskegon, Mich., has adopted full five-day week, three 8-hour shifts daily, in coil manufacturing division, employing about 250 operatives.

American Radiator Co., 8007 Joseph Campau Avenue, Detroit, is carrying out expansion at local plant and will centralize its equipment divisions here. Locke Pattern Works, 3224 East Jefferson Street, a subsidiary, will be removed to main plant and capacity increased. A die-manufacturing department will also be installed. Working force will be increased about 25 per cent.

DeFoe Boat & Motor Works, Bay City, Mich., is considering rebuilding boat-building plant destroyed by fire several weeks ago, to include new machine shop and other units.

Mead Screw Products, Inc., Detroit, has been organized by D. Edmund Mead, 2821 Brooklyn Avenue, and associates, to manufacture screw machine specialties and operate a machine shop.

Fremont Canning Co., Fremont, Mich., has awarded general contract to Muskegon Construction Co., Muskegon, Mich., for two and three-story addition. Cost over $75,000 with machinery.

Murray Corpn. of America, Inc., 1424 Aberle Street, Detroit, manufacturer of automobile bodies, is increasing production schedule in tool-making department, recalling about 1200 men.

AC Spark Plug Co., Flint, Mich., manufacturer of spark plugs and ignition equipment, is advancing production, recalling over 1000 men.

Mich-I-Penn Oil & Grease Co., 6135 Lindsdale Avenue, Detroit, manufacturer of lubricating oils, etc., has awarded general contract to Corrick Brothers, Michigan Theater Building, for a one-story addition. Cost about $25,000 with equipment.

Milwaukee Tool & Forge Co., South Milwaukee, Wis.; Saturn Heater Corpn., Bryan, Ohio; Defiance Stamping Co., Defiance, Ohio, and Pressed Products Co., Napoleon, Ohio, which are being merged, as noted in Oct. 6 issue of THE IRON AGE, will operate at Defiance, Ohio, as Saturn Corpn. Officers of the new organization will include W. D. Kyle, president, Line Material Co., Milwaukee; J. D. Otis, vice-president, Alemite Corpn., Chicago; O. J. Markey, president, Aro Equipment Corpn., Charles Wertz, president, Farmers National Bank, both Bryan, Ohio; L. F. Serrick, president, L. F. Serrick Co., Defiance, Ohio, and Harold L. Schlosser, president, Pressed Products Co.

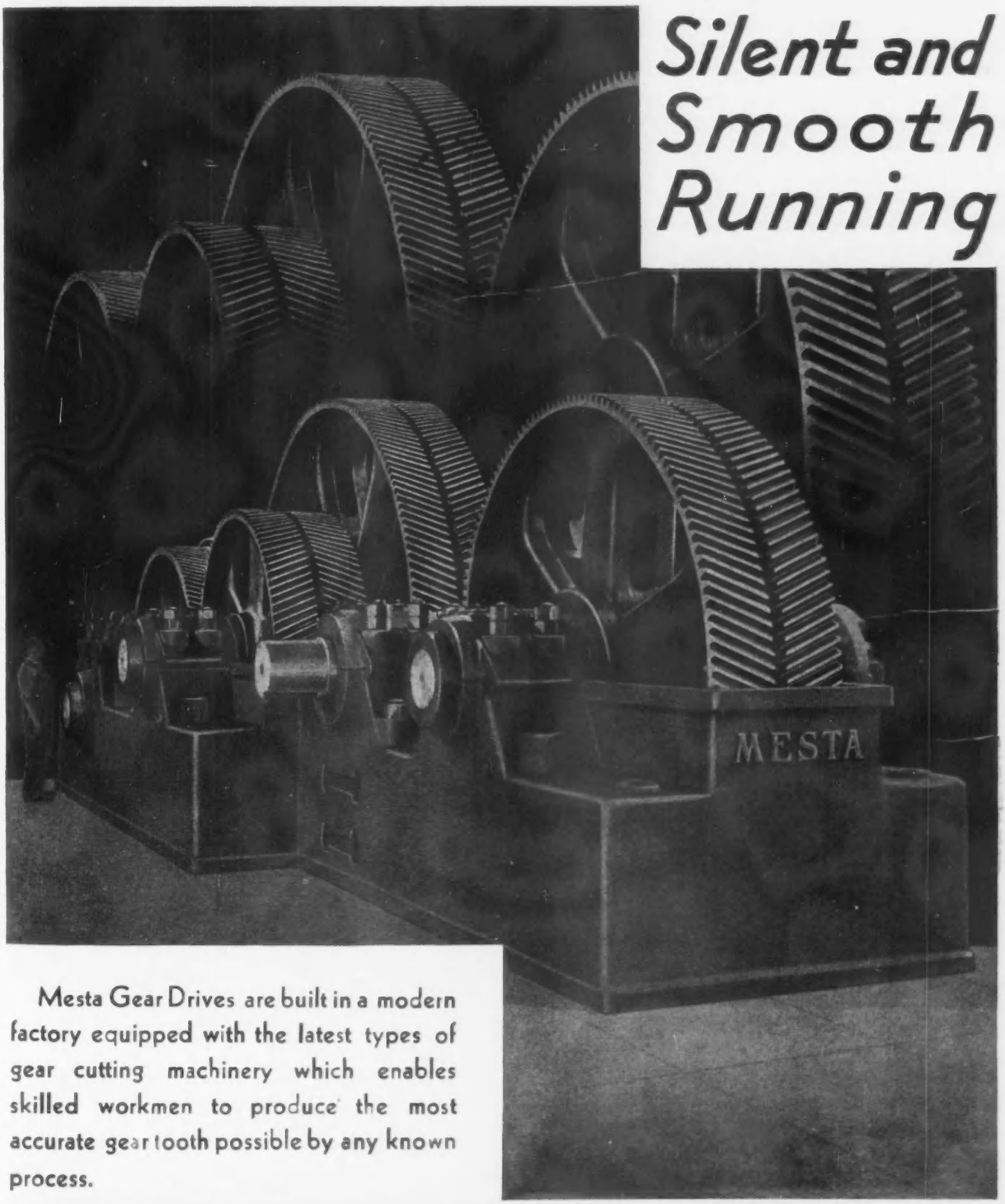
NEW ENGLAND

Bureau of Supplies and Accounts Navy Department, Washington, asks bids until Nov. 8 for one motor-driven automatic screw machine (Schedule 8967) for Newport, R. I., Navy Yard.

Cheshire Ball & Socket Co., Cheshire, Conn., manufacturer of steel balls, etc., has doubled its production schedule to a full six-day week basis.

MESTA GEAR DRIVES

Silent and Smooth Running



Mesta Gear Drives are built in a modern factory equipped with the latest types of gear cutting machinery which enables skilled workmen to produce the most accurate gear tooth possible by any known process.

MESTA MACHINE COMPANY · PITTSBURGH

Sanford Manufacturers, Inc., Boston, has been organized by Paul A. Draper and Edward V. Hickey, 66 Fountain Street, West Newton, Mass., to manufacture hardware.

H. E. Fletcher Co., West Chelmsford, Mass., operating a granite works, has awarded contract to Boston Bridge Works, Cambridge, Mass., for one-story addition, 100 x 160 ft. Cost over $40,000 with equipment.

International Silver Co., Wallingford, Conn., has adopted an overtime production schedule of 13 hr. a day, with full working force.

Colonial Blower Co., Hartford, Conn., has been organized by R. A. Briggs, Sr. and Jr., West Hartford, and F. S. Preston, Wethersfield, Conn., to manufacture mechanical blowers and draft equipment.

Silent Glow Oil Burner Corpn., Hartford, Conn., is running on capacity schedule, 24-hr. day basis, giving employment to about 105 persons.

E. Ingraham Co., Bristol, Conn., manufacturer of clocks, clock mechanisms, etc., has started new production division for special line of kitchen cabinets and kitchen furniture, adding to working quota.

Fafnir Bearings, Inc., New Britain, Conn., has reduced its capitalization from $50,000 to $10,000.

SOUTH CENTRAL

United States Engineer Office, Chattanooga, Tenn., asks bids until Nov. 15 for construction of lock and dam No. 3, Tennessee River, about 29½ miles below Decatur, Ala. Cost about $1,500,000.

Ohio Oil Co., Findlay, Ohio, has arranged for purchase of gasoline refining plant of Reserve Petroleum Co., Haynesville, La., and will operate as branch. Plant has capacity of 2500 bbl. Improvements will be made, including storage and distributing facilities. Crude oil will be secured from Haynesville oilfield.

Shreveport Engineering Co., Shreveport, La., recently organized by G. Taylor Barnes and James B. Estabrook, 2416 Laurel Street, to manufacture mechanical fans and kindred equipment, has taken over local building and will install lathes, spot welder and other equipment. One-story addition will be erected in near future.

Brookhaven Cotton Compress Co., Brookhaven, Miss., plans rebuilding part of plant recently destroyed by fire. Loss over $70,000 with equipment.

Common Council, Maysville, Ky., plans installation of pumping machinery and other equipment in connection with municipal waterworks and filtration plant. Cost about $47,000. Fund has been secured in that amount.

Bogalusa Paper Co., Bogalusa, La., has plans for first two units in connection with $1,000,000 expansion program, comprising addition to power plant and chemical recovery unit, respectively. Work will begin in November. Other buildings will be erected closely following. United Engineers & Constructors, Inc., 112 North Broad Street, Philadelphia, is engineer.

MIDDLE WEST

United States Engineer Office, First District, Chicago, asks bids until Nov. 16 for construction of three oil barges (Circular 60).

Electric Coal Mining Equipment Co., 901 Central Avenue, Wilmette, Ill., has been organized by H. C. and R. G. Reed, Danville, Ill., to manufacture coal-mining machinery and kindred equipment.

Champlin Refining Co., Boone, Iowa, has plans for two one-story buildings for bulk oil storage and distributing plant. Cost about $35,000 with equipment.

Chicago-Great Western Railroad Co., 122 South Michigan Avenue, Chicago, has plans for extensions and improvements in engine house and shop facilities at Red Wing, Minn.

Public Service Co. of Colorado, Champa and Fifteenth Streets, Denver, plans transmission line in portion of Larimer County.

Stanolind Oil & Gas Co., subsidiary of Standard Oil Co. of Indiana, 910 South Michigan Avenue, Chicago, has arranged for increase in capital from $32,000,000 to $50,000,000, part of fund to be used for acquisition of Midwest Refining Co., same address, affiliated with parent company noted, operating oil properties, refineries, pipe lines, etc., and to carry out development and expansion.

Shellmar Products Co., 3501 West Forty-eighth Place, Chicago, paper products, including glassine paper specialties, has asked bids for one-story top adition to printing plant, 108 x 205 ft., 4822-30 South St. Louis Avenue, including improvements in present plant. Cost about $100,000 with machinery. A. Epstein, 2001 West Pershing Road, is architect and engineer.

F. H. Weiss, Le Center, Minn., road contractor, is planning to rebuild one-story machine shop recently destroyed by fire. Installation will include electric drill, acetylene welding equipment, gas engine, tools and other equipment.

Fuel Saver, Inc., 1467 Elston Avenue, Chicago, has been organized by Robert E. Bright, Henry P. Morrissey and associates to manufacture fuel-saving equipment and devices.

Montana Power Co., Butte, Mont., plans transmission line in parts of Chouteau and Hill Counties. Cost over $50,000.

City Council, Morris, Minn., has plans for a municipal electric light and power plant. Arrangements are being made for bond issue of about $150,000 for building and equipment. Robert J. Torrens, Shubert Building, St. Paul, Minn., is consulting engineer.

Berst-Forster-Dixfield Co., Cloquet, Minn., manufacturer of woodenware specialties, has superstructure under way for three two-story and basement additions, 102 x 226 ft., 102 x 145 ft., and 81 x 102 ft. Cost about $250,000 with equipment. Company headquarters are in Grand Central Terminal, New York. Homan F. Hollock, Oswego, N. Y., is architect and engineer.

FOREIGN

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Nov. 23 for one 10-ton overhead electric traveling bridge crane for navy yard at Cavite, P. I. (Specification 7077).

La Escondida Mines, Quieriego, Sonora, Mexico, operating silver mines, are planning new ore-treatment plant. Cost over $40,000 with equipment.

Ministry of Economics and Communications, Government of Iraq, Baghdad, Iraq, asks bids until Jan. 16 for construction of channels and control works for service in flood relief, near Ramadi and River Euphrates. Plans at Office of Coode, Wilson, Mitchell & Vaughan-Lee, 9 Victoria Street, London, England, consulting engineers for Government of Iraq.

Firestone Tire & Rubber Co., Akron, Ohio, has acquired property at Bilbao, Spain, for new plant for manufacture of automobile tires and tubes, giving employment to about 200 workers. It will be operated by Spanish Firestone Tire & Rubber Co., affiliated interest, recently formed with capital of 15,000,000 pesetas (about $1,200,000).

Bolinder and Munktell Mechanical Works, Eskilstuna, Sweden, have been organized with capital of 12,500,000 kroner (about $2,187,500), to take over Bolinder Works, manufacturer of marine motors, stoves, wood-working machinery and other specialties, and Munktell Works, manufacturer of similar equipment, including agricultural machinery and implements. Consolidated company will increase lines of manufacture, standardizing present duplicating equipment.

Ministry of Finance, Government of Uruguay, Montevideo, Uruguay, is considering erection of Government-owned alcohol distilling plant. Cost about $500,000 with equipment.

PACIFIC COAST

Board of City Trustees, Escondido, Cal., plans a municipal electric light and power plant, using Diesel engine units, and distributing system. Cost over $80,000 with equipment. John H. Chase is engineer.

Bureau of Public Roads, Department of Agriculture, San Francisco, asks bids until Nov. 3 for new buildings at Coast Guard barracks, Alameda, Cal., including new shops (Unit 19) and pumping plant (Unit 25), underground heating ducts, piping and other mechanical equipment.

American Brake Shoe & Foundry Co. of California, 74 New Montgomery Street, San Francisco, has acquired site at San Bruno, Cal., for erection of new plant, work to begin early next year. Cost over $60,000 with equipment.

Ventura Citrus Association, Ventura, Cal., has awarded general contract to William P. Neil Co., Inc., Vernon, Cal., for one-story and basement addition to packing plant, 100 x 150 ft. Installation will include conveyors and other mechanical-handling equipment. Cost about $40,000 with equipment. W. W. Ache, 1616 Fourth Avenue, Los Angeles, is architect.

Board of Education, Yelm, Wash., plans one-story vocational shop, 108 x 117 ft., at school. Becket & Wurdemann, Meany Hotel Building, Seattle, are architects.

Federal Mining & Smelting Co., Coeur d'Alene, Idaho, is resuming operations at Page and Morning lead and zinc mining properties, following shut-down since last May.

Public Market Co., Portland, has plans for a new multi-story public market on Front Street. Cost $1,400,000 with equipment. Loan to begin project in amount of $800,000 has been secured from Reconstruction Finance Corpn. Installation will include power house, cold storage and refrigerating plant, conveying and other equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 1 for one motor-driven wet tool grinder (Schedule 8901); until Nov. 8, two motor-driven bilge pumps and spare parts (Schedule 8931), one motor-driven metal-cutting saw (Schedule 8929), 8000 lb. admiralty metal tubing (Schedule 8945), all for Mare Island Navy Yard.

F. M. Chrisman, 1023 Russ Building, San Francisco, and associates have applied for permission to use water from Middle Fork of American River, Placer County, for hydro-electric power development. Entire project to cost over $1,000,000.

Eden County Township Water District, Hayward, Cal., Cyril Williams, Jr., 369 Pine Street, San Francisco, engineer, plans installation of pumping machinery and auxiliary equipment, pipe lines, meters, etc., in connection with new water distributing system. Cost over $70,000 with equipment.

Census Bureau Reports 1931 Pig Iron Output

WASHINGTON, Oct. 25.—The production of pig iron and ferroalloys in blast furnaces in the United States in 1931 totaled 18,288,715 gross tons, valued at $296,212,048, at f.o.b. furnace prices, a decrease of 57 per cent in quantity and 60.2 per cent in value as compared with 42,486,758 tons, valued at $744,588,193 reported for 1929 to the Bureau of the Census.

The 1931 production included 14,389,802 tons, valued at $231,531,137, in steel works pig iron and alloys and 3,898,913 tons, valued at $64,680,911, in merchant iron and alloys. In addition, 131,600 tons of ferroalloys, valued at $13,349,271, was produced in electric furnaces. This output represents decreases of 40.3 per cent and 53.4 per cent, respectively, as compared with 220,411 tons, valued at $28,655,447, reported for 1929.

The total production of ferroalloys in 1931, both in blast and electric furnaces, amounted to 472,471 tons, valued at $31,032,811, against 868,543 tons, valued at $70,261,266, reported for 1929, the decreases being 45.6 per cent and 55.8 per cent, respectively. The ferromanganese and spiegeleisen output in 1931 was 239,234 tons and the ferrosilicon output was 197,980 tons.

The basic pig iron output was 10,149,697 tons, Bessemer, 4,499,218 tons and foundry 2,129,536 tons.

Republic Steel Corpn. has issued a new price card, effective Oct. 1, on Toncan copper molybdenum iron pipe. The new card, No. 4, embodies a simplified method of computing prices and reflects slight changes in prices of various sizes of Toncan iron pipe.

Tariff Is Key to Steel Industry's Future

(*Concluded from page 642*)

tenets. Industry recognized the workingman as a consumer instead of a mere element of cost. It was discovered not only that it was unnecessary to drive the hardest possible wage bargain, but that there was advantage in being liberal so long as competitors were equally liberal. It was like playing football. So long as the rules were observed, a fine, clean game could be expected. But if the rules were ignored, a vicious, brutal spectacle would be the inevitable result.

The restraint of American manufacturers regarding wages, coupled with the economies derived from mass production and technical advancement, yielded such handsome profits that American business sentiment became too optimistic. Productive capacity in certain industries, as later events proved, overexpanded. Speculation in securities, fed by credit expansion, became rampant, sucking a large part of the floating capital of the world into its maw. Finally the bubble burst and, in combination with foreign maladjustments of both political and economic character, set in motion the drastic deflation we have been experiencing for the past three years. Prices of raw materials, always more sensitive than those of manufactured products, dropped first and most sharply, causing widespread distress and wiping out much purchasing power the world over.

The Plaint of Agriculture

Our own agricultural class suffered severely and has added its voice to that of the international bankers in demanding a reduction in the tariff. Industry and agriculture are out of balance, we are told. At present prices of produce, the farmer cannot buy the product of the factory.

But adding one loss to another does not produce a gain. Agriculture, in asking industry to open the door to even worse misfortune than it has so far experienced, is not pointing the way to recovery. The situation can be better understood by measuring the relative importance of the factory and farm in our economic life. According to Dr. Virgil Jordan, well known economist, the 1929 income of agriculture available for the purchase of urban goods and services was roughly six billion dollars. In the same year the wages and salaries of urban workers totaled 55 billions. Hence it is not a question of one-half the country suffering at the expense of the other half. Even if farm purchasing power had been doubled in 1929 it would have been only 22 per cent of that of non-agricultural workers. The exchange between farm and factory, therefore, is by no means an even one. A very large proportion of the business of the country is in fact carried on among the non-farm classes to the entire exclusion of agriculture. Can we afford to jeopardize this huge domestic trade to satisfy the demands of the man on the land? One is reminded of an incident that occurred some seventy years ago, when the Federation of North German States was considering raising its tariff walls to protect industries that were then in their beginnings and sorely pressed to meet the competition of British products. The ambassador of Great Britain at Berlin, well aware of the strong influence of Prussian landed proprietors in that court, pointed out that a higher tariff would be an injustice to German agriculture, which at that time exported large quantities of grain and timber to the British Isles. But Germany, as we all know, became a protectionist country and it was not long before its industry grew large enough to absorb all of the grain and timber formerly exported.

There is a lesson in this example. If our own country had not adopted a policy of protection it would still be an agricultural nation and a commercial dependency of industrial countries to which it shipped its produce. In contrast, witness our industrial preeminence and economic strength today. We still have an agricultural surplus, it is true, but it is small compared with our total business and should be absorbed in large part within a relatively few years, provided industry is not deprived of the protection it requires. It would be far better and cheaper to grant agriculture a subsidy through a domestic allotment plan, such as is in force in certain countries abroad, than to endanger our whole industrial structure by embracing the free trade philosophy.

The Risk to the Home Market

But what about the compensating advantages of increased exports under a low tariff? Our entire exports in 1929 amounted to only five and a sixth billions, a mere drop in the bucket compared with our domestic business. We cannot afford to risk destruction of our great home market by exposing American manufacturers and American labor to the dog-eat-dog competition in vogue in international trade.

One valuable lesson has been learned from our experience in the 20's. We have become consumer-conscious. We recognize the value, in terms of profits, of a well paid, enterprising and intelligent body of working people. We have learned to observe rules of the game that permit and encourage the growth of mass purchasing power in our country. Shall we sacrifice all this, to obtain a possible and uncertain market in some foreign land? To cite an extreme example, suppose we followed the rule of the orthodox economist and produced only what we could produce most cheaply. We would immediately give up copper mining and buy all our red metal from Africa. If we waited a thousand years possibly the living standards and wages of the Negro natives who mine African copper would rise sufficiently to permit them to buy our automobiles and our electric refrigerators.

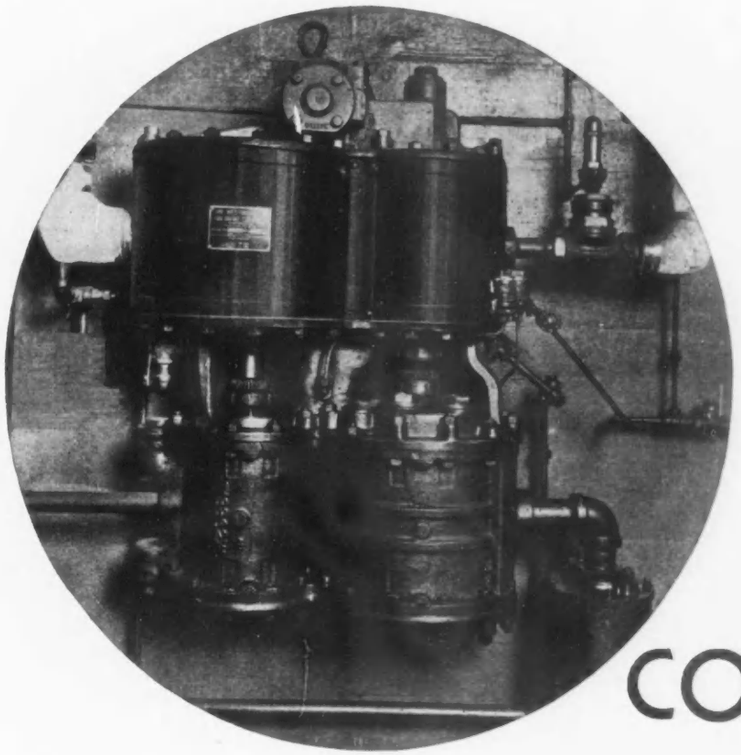
Why Europe Wants to Break Into Our Market

The trouble with European industry is that it is not consumer-minded. It grinds its labor down as far as so-called "economic" laws will permit and then trusts to providence that somewhere else it will find masses well enough off to buy its products. It is precisely because American masses still have some purchasing power that the European manufacturer is so anxious to break into our market. He is not far-sighted enough to see that if he succeeded in breaking into this market he would soon destroy it. In fact, that is exactly what is going on at the present time. Currency depreciation and the competitive situation it has created in world trade are destroying the effectiveness of our tariff barriers and a growing influx of foreign goods is robbing our workmen of jobs and bread at the very time when the country is entering a winter when its energies and resources will be strained to protect its people from hunger, cold and privation.

Steel Imports Mean Increased Unemployment

The invasion of foreign products is particularly disturbing to American steel manufacturers. Apart from all humanitarian considerations, it is imperative for them to do all in their power to provide jobs for their workmen. Employment represents the last line of defense in the struggle of our steel industry to protect its investment. Idle capacity eats itself up and an organization once lost cannot be rebuilt except at great cost. It is not merely a question of one ton of foreign steel replacing one ton of the domestic product. The effects are more far-reaching, as recent studies show. The labor required in making a net ton of finished steel, in all the operations directly under the control of the producer, from mine to mill, ranges from 30 to 65 man-hours, depending on the class of product turned out. The average for all finished products is approximately 40 man-hours. Hence when 1000 tons of foreign steel is imported 5000 American steel company employees are deprived of a day's work.

But the effects of importations do not stop there. No account has been taken of the loss sustained by our railroads and their employees. When a ton of imported steel enters the country the railways have only one ton



AN IDEAL AIR COMPRESSOR

steam-driven

WHEREVER compressed air is needed, and steam the most convenient source of power, then the WESTINGHOUSE steam-driven compressor is an ideal machine . . . It is a self-contained unit that can be easily installed by fastening to a post, to the wall, or upon a supporting stand made for the purpose . . . Several sizes are available, but the 150 cu. ft. machine is the most popular. It is very efficient and economical, steam being compounded and air compressed in two stages . . . This machine was originally developed for air brake service on locomotives and its rugged construction assures dependable operation and long life for any sort of industrial use.

WESTINGHOUSE TRACTION BRAKE CO.

Industrial Division - - - Pittsburgh, Penna.

WESTINGHOUSE AIR COMPRESSORS

"QUALITY MACHINES FOR QUALITY SERVICE"

(9110)

to haul. A recent investigation discloses that for every net ton of ingot steel produced in this country 5¾ tons of raw and finished products are handled by the railroads. Thus every ton of steel that is imported robs our carriers of nearly 5 tons of traffic.

More, Not Less, Protection Needed

Our steel manufacturers have repeatedly brought these facts to the attention of our public authorities but with discouraging results. Although there has been an anti-dumping law on the statute books since 1921, appeals for relief under its provisions have been largely in vain. Now the time has come when enforcement of that law is not enough—when something besides the protection possible under that act is necessary. In fact, if the inflow of imports continues to swell, one of the first duties of the coming Congress will be to enact an emergency tariff law, such as it passed in 1921 to cope with a similar situation. How ridiculous to talk about the need for a lower tariff under the circumstances.

Of course, we are hearing a great deal today about retaliation. The example of Canada is cited. Our Northern neighbor recently placed virtually prohibitive duties on some of the steel products that were formerly imported from the United States. But the reason given for this action is interesting. Despite the fact that low tariff advocates contend that our duties on farm products are ineffective, the American barriers against Canadian agriculture were the principal reason for the Dominion's present attempt to penalize our manufacturers.

I am sure no American steel producer would favor taking away what protection our hard pressed farmers have during this period of world-wide distress for the sake of recovering possible losses in Canadian business. They realize that our best hope of recovery lies in guarding all fronts of our domestic economy.

Protection Encourages Imports

Our economic future lies at home. We have built an immense steel industry predominantly on the basis of domestic consumption. Only a small part of our output goes abroad and practically none goes to European steel-producing nations. Let them stay out of our country as we have stayed out of theirs and fight their battles in the neutral markets of the world. And don't let them forget that the growth of our domestic industry has greatly increased the power of those neutral markets to buy their steel products. Although our country has seen the wisdom of protecting what it produces within its boundaries, it purchases vast quantities of commodities that it cannot produce—silk from Japan, rubber and tin from the East Indies, coffee from Brazil, tea from China and British possessions, just to mention a few. Critics of our tariff may not know that two-thirds of all of our imports enter this country duty-free. To be precise, 65 per cent of our imports were duty-free in 1929 and 67 per cent in 1930.

However, our ability to import these duty-free products is measured by the prosperity of our industry, and that in turn is dependent on protection for both manufacturer and labor. American manufacturers would have no fear of a tariff for revenue only if their labor costs were as low as those of European competitors. But they realize that if they drove their labor costs down to that level, they would sacrifice their main source of revenue, the domestic market.

The future of steel production and consumption, therefore, seems inextricably intertwined with the future tariff policy of this country. A free trade experiment now would prove disastrous and set us back many years. On the other hand, more intensive cultivation of domestic consumption will not only swell domestic business but expand our imports likewise. If larger imports are the great need of the times, that is the way to get them. It is not necessary that we import directly from the European countries that owe us money or consume our farm products. International transactions can be three-sided as well as two-sided. The countries from which we buy raw materials can and do buy from Europe.

Protection Permits Volume Production

Besides protecting our domestic market and encouraging imports, a tariff is essential because of the important relation of volume to profits. A recent study of prices, profits and production in the steel industry indicates that, since the war, volume rather than price has controlled earnings. Unless American workers receive enough in wages to buy the products of industry, industry cannot produce in large enough volume to earn a profit. The king cannot afford a crown unless all his subjects have crowns too.

The future of steel production and consumption also depends on improvement in production technique and on the development of new products. Improved equipment reduces costs without lowering wages. In fact, it makes price reductions possible and thereby raises real wages. Improved equipment, moreover, increases profits and yields more capital, as well as labor, for other undertakings. Hence it places a premium upon ingenuity in devising new products and new forms of employment. Without doubt, coming years will see increasing cooperation between capital and technical ability to foster and bring out new products. Similarly there will be less blind investment of capital in established industries, with the inevitable waste from excess capacity and its twin evil, cut-throat competition.

This promising future—a future which points to further development of consumer products and therefore a large use of steel sheets and other light rolled materials—awaits us if we hold fast to tried and true principles of protection and reject the plausible but false counsel of low tariff advocates.

New Trade Publications

"Foremen's Safety Conference," a 23-page booklet recently issued by the policyholders service bureau of the Metropolitan Life Insurance Co., 1 Madison Avenue, New York, presents one method that is being used extensively for developing safety interest among foremen and others in supervisory positions. The report offers suggested programs for a series of seven informal conferences for discussing various phases of safety work. These programs, which are confined to fundamental principles of safety work as applied to all types of industry, were developed after a review of the activities of a number of industrial organizations in the United States.

Sheet Metal Working Machinery.—Niagara Machine & Tool Works, Buffalo. Catalog No. 94, containing bulletins No. 74-80, describing and illustrating folders and brakes; burring, turning and other rotary machines; groovers and seamers; slip roll formers; snips, hand tools, stakes and roofing tools; lever shears and punches; and rotary and squaring shears. Specifications and other essential data are included.

Toolroom Machine.—Pratt & Whitney Co., Hartford, Conn., has issued an instructive 8-page pamphlet describing and illustrating the operating principles of the Keller automatic toolroom machine. Many interesting and unusual examples of economical punch and die production from master forms, templets or duplicate pieces are given.

Gears.—Gleason Works, Rochester, N. Y., has issued a 24-page illustrated booklet entitled "Engineering Data on Large Hypoid and Spiral Bevel Gears," which is intended to meet the demand for sufficient and accurate information for the use of the engineer in connection with large curved tooth, spiral bevel and hypoid gears. The practices recommended are based upon the experience of the Gleason Works, as well as of that of many users in widely different applications. There is also appended a list of spiral bevel and hypoid combinations which have been adopted as standard for the particular horsepower involved.

"Unemployment Insurance in Wisconsin" is the title of a 105-page book recently written by Roger Sherman Hoar. This book outlines the history of legislation in Wisconsin in connection with unemployment insurance and is of particular interest to manufacturers and others because of the consideration of similar plans by Connecticut, Massachusetts, New Jersey, New York, Ohio and Pennsylvania. The book is published by the Stuart Press, South Milwaukee, Wis.

Hoist Motors.—General Electric Co., Schenectady, N. Y. Leaflet covering construction and ratings of totally enclosed motors of 1½ to 15 hp. capacity for alternating current use, two or three phase.

The Technical Service Committee of the Engineers' Club of Philadelphia reports a noticeable increase in requests for engineering personnel and in the number of men returned to work through its efforts. This committee was recently formed as an employment agency for members of the various engineering societies. Up to date it has placed a total of 150 men in positions.

Appearance as a Sales Factor in Design

(*Concluded from Page 649*)

On some products considerable changes in color do not matter, but on others only slight changes can have an effect on sales. Color can be sweet, pretty and effeminate, or it can be virile, masculine and even brutal. Kitchens were formerly like hospital operating rooms, and household magazines were praising the white articles for the kitchen for their cleanliness. But it has lately been learned that green, or yellow, or lavender can give the clean appearance and also serve to take some of the drab chill out of the kitchen work.

Much of the deadening effect of dull shops on workmen has likewise been removed by machinery painted in colors. The machine-tool builders some time ago standardized on gray, but many of them are now furnishing their machines in other colors on request, and many gray machines are painted later to harmonize with the color of the shop in which they are installed. Actual tests made by color experts of the National Lead Company and the New Jersey Zinc Company showed that better and faster work was done by workmen in rooms where the machinery and surroundings were painted in colors to harmonize with the type of work being done.

Color Harmonies Akin to Musical Rhythms

The application of color is too much of an art to permit giving more than general rules for its use. To draw an extreme case, it would be difficult to imagine a prospective woman customer giving her order for a refrigerator if it were painted a bright red. Yet Dr. Munsell, one of the outstanding colorists of the country, told me that he has seen time and again cases where the color made or unmade sales. This authority likens the effect of color combinations on a product as seen by the eye to that of the fall of musical rhythms on the ear. One example recently came from a Middle West manufacturer of electric fans whose models were not selling, but who began to realize sales when he changed the color from red to green. Obviously, the red was suggestive of heat, when he was trying to impress customers with the cooling power of the fan. Road rollers have recently been painted in an inspiring bright orange color, but such a color would be inharmonious on a machine for careful precision work where "quietness" is desirable. Never has there been a time when it was more necessary for the maker of consumer products to consult an artist to see that the article which he is offering for sale expresses itself to best advantage in its finish.

Unlike the days when the woodcarver was called in to make a pattern for an iron machine element, the artist who is summoned today must be one with an appreciation of engineering applications, and he must be given freedom to change specifications of materials if he sees fit. Examples could be given of products where brasses, bronzes, nickel alloys, and stainless steels have been utilized for no other reason than for their effect in their natural polished colors. Machinery for the food, textile and tobacco industries, where the factories are much visited by the public, is particularly susceptible to this kind of ornamentation. Packaging machinery in greens and reds, with moving parts set off in silvery aluminum and magnesium alloys, and some castings in polished golden bronze, have lately been made for such plants. Incidentally, the moving parts in an aluminum-silicon casting alloy required no bushings at the bearing points, and functioned more efficiently because of their lightness.

Beauty Treatments for Welded Construction

Probably the most ugly machinery ever produced was made half a dozen years ago when welded steel construction suddenly became almost a craze. Westinghouse was one of the first companies to make a serious attempt to free the built-up welded machine of its appearance of a junk pile. It was done by tapering and shaping the steel sections, by smoothing down the welds, and by the elimination of tack-welding from the outside of the machine. It cost more to make a welded machine in this manner, but it was found to be worth while. Now, many clever combinations of "modern" forms and lines have been developed to add appearance to welded structures. The welded electrical-machinery frames of the principal manufacturers have assumed graceful lines, and where they are designed for power houses they are frequently painted in bright colors and trimmed with stainless steel or polished brass. A maker of inclinable presses, who now builds his machines from steel plates, offers them "custom built" because of the flexibility of cutting and welding the plates.

Plastics Offer Many Possibilities

The newer molding materials have provided a means for adding color and form cheaply to many products. Where the number of parts to be made warrant the cost of the molding dies, many handles, caps, levers, covers, and accessory parts can be molded in colored plastics, the color being inherent in the material and requiring no polishing or painting. The modern plastic materials have compressive strengths up to 36,000 lb. per sq. in., and tensile strengths to 8000 lb. per sq. in., and can readily replace wood, ceramics and metals. Because of their high dielectric strength they have found innumerable applications in electrical products. Last year a maker of apartment house telephones put out a line of instruments with cases molded in colors, and because of the insulating value of the material all of the insulating bushings and washers could be eliminated, thus saving more than sufficient in cost to pay for the new material as compared with the old cheap stamped steel case. On the other hand, a clock manufacturer found that in the low-priced electric clock the case could be die-cast in a zinc-base alloy and lacquered more cheaply than when molded in plastics.

To sum up, most of the live metal-products plants today are pushing their designers for new products and for improvements in their standard articles. The use of outside consultants for criticism and suggestion has become general, even with those large companies that have capable engineers and art directors. Appearance is a factor that has lately become of major importance. Lacquers, chromium plate, plastics, and special metals are being added with the artist's eye to create sales appeal in otherwise dull machines and articles, or to make them harmonize with the settings into which they will be placed. Scores of new alloys and new non-metallic materials that were not available during the 1921-22 depression are now making it easier to lighten, strengthen, and add appearance to products.

Waiting for the Starting Signal

Important is the growing feeling that improvements in design should be incorporated into the product without waiting for periodic models. This has required special attention to the installation of methods of changing production facilities quickly to incorporate the changed part into the product without waste of time or old parts. Many plants have been holding up new models during the last year of depression because of exceptionally dull markets. One maker of wiring devices and electrical accessories has a complete line of new articles for release when an increased buying power makes it advisable to change over his equipment for the new parts. The so-called fear of letting competitors see the new products seems to be decidedly secondary to the matter of financial credits for new expenditures, and also secondary to a feeling that further development will be made before the slowly moving market would permit realization of profit on the expenditures for the equipment necessary to produce the articles. There is every indication that the real upturn in the business cycle will be the signal for the announcement of many new products, and certainly it will be the beginning of an increasing period of design development surpassing anything that has gone before.